

Saimaan ammattikorkeakoulun julkaisuja
Saimaa University of Applied Sciences Publications

Minna Ikävalko – Sofia Rekord (Eds.)

**STUDIES OF DEVELOPING FINNISH-RUSSIAN
BUSINESS CLUSTERS**

Joint project of Finnish and Russian Master Students.

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FOREWORDS

I am happy in introducing the second book of cluster joint project between Finnish and Russian Master Students. The book consists of final reports, which are developed by Master students from Saimaa University of Applied Sciences (Finland) and St. Petersburg State University of Economics (Russia). The project was carried out and the reports were finished during the autumn 2012. The similar cluster project was carried out successfully in autumn 2010, and this second project was natural continuum with more students and much extended fields of industries. Altogether 37 students participated the project; 15 students from Saimia and 22 students from Finec.

The objective of this project was to find out the role of clusters in different fields of industries, and analyze the opportunity to develop trans-border Finnish-Russian clusters. Finding new ways to cooperate and operate in international sphere is giving companies competitive advantage in growing competition. The second, broader objective was to gain experience in operating multicultural environment, both for students and supervisors. Capability of working in international teams will be normal requirement for graduates when they enter to business life.

This book consists of 11 individual reports. In some reports the Finnish and Russian analyses are combined together, and some research results are presented in separate reports. The layout of the reports is original; this way we are able to see the trans-border differences also in reporting research results.

This project has – once again – been an interesting experience. With different cultural possibilities, similarities and difficulties, it has offered us the same kind of working environment than companies are facing international operations.

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Dear readers!

Current book of surveys is a result of the international master students' project of our partner universities: Saint-Petersburg State University of Economics and Saimaa University of Applied Sciences. The idea of the project is to analyze opportunities for developing Finnish-Russian trans-border clusters, using the toolkit of international business and current conjuncture analysis, and create possible models of trans-border clusters in the majority of industrial and post-industrial business sectors, significant for Russian-Finnish economic cooperation, namely: machinery, forest industry, logistics, traditional and alternative energy sectors, IT, food industry, tourism, health and well-being sector.

This is the second book of master students' surveys, published in cooperation between our universities since 2011. The logic of the research is based on the methodology of Harvard Business School (M. Porter's Institute for Strategy and Competitiveness) and algorithm of the analysis is the following:

1. National competitiveness (country diamond model by M. Porter) and competitiveness of the border region;
2. Assessment of national institutional and business environment for the particular trans-border cluster;
3. Factor analysis: opportunities and constraints for the particular trans-border cluster to grow;
4. Cluster analysis (supply chains, access to resources, demand and supply) – existing or possible linkages, roles of Russian and Finnish enterprises;
5. Creation of the cluster map (supporting research institutions, government authorities, main manufacturers and support services, distributors, consumers, etc.);
6. Formation of the cluster diamond model.

Though the surveys are made by young researchers, a lot of potential cluster actors are taken into consideration, and results, including cluster analysis, cluster maps and the conclusions, are fresh and original. These results could be useful for industrial enterprises, supporting service companies and institutions, governmental authorities of our countries, considering opportunities of Russian-Finnish cooperation on all levels.

For master students current project is an opportunity to work virtually in international project teams, including not only Russian and Finnish, but also – students from other countries, getting cross-cultural experience, forming social networks, creating the spaces of trans-border cooperation as a basement of possible future clusters.

I am firmly convinced that the idea of such projects makes a quintessence of educational and scientific cooperation between our universities on the master level – creating a “bridge” to the future, educating young professionals who will continue economic cooperation between Russia and Finland, expanding promising projects into the whole Baltic Sea Region.

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**OPPORTUNITIES FOR THE DEVELOPMENT OF RUSSIAN-FINNISH
TRANS-BORDER CLUSTERS. MACHINERY AND MECHANICAL
ENGINEERING.**

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Introduction

Porter describes cluster as “the concept of clusters rests on a broader and dynamic view of competition among firms and locations, based on the growth of productivity. Interconnections and spill overs within a cluster often are more important to productivity growth than is the scale of individual firms.” (Porter, p. 27.)

Machinery and mechanical engineering industry seems to cover a huge amount of different kind of companies, producers and plants in Finland. That’s why we have decided to concentrate our work on the intelligent machines section. Also it has been found out that in Finland all the biggest companies in this field are somehow connected to existing clusters, but cooperation with the Russian market is still minimal.

The process of globalization stimulates Russian companies to enter the world market, widen the borders of their supplies and business partnership. It is necessary to create partnership networks for successful development of innovational processes. One of the most important elements of innovation networks are channels and forms of transferring new technologies and know-hows from one organization to another within the network.

Especially important for Northwest region and St. Petersburg in particular are Finnish experience in cluster activities and its innovative approaches. Nowadays Russian Machinery strongly needs experience, fresh ideas, new approaches, collaboration with international partners what can be provided by certain activities carried out by trans-border clusters.

As it has been mentioned students have decided to consider possible linkages in sub-industry of intelligent machines. Thereby from Finnish side existing Intelligent Machines cluster was chosen. It includes following focus areas: mobile work machines, machines and devices for agriculture and forest industry, machines and devices for the food industry, special vehicles, factory automation, lifting, moving, and logistics, machines and devices for process-industry use and coating and corrosion prevention. As there is no similar cluster in Russia it was decided to analyze Russian market of Machinery products and choose most perspective suppliers and machine building companies¹. Cluster analysis allowed authors select suitable related clusters, universities and research institutes and institutions for cooperation.

Objectives

The main objectives of this cluster joint project are to analyze differences in clusters between Finland and Russia, to clarify the interconnection of clusters between Finland and Russia, to provide information about already existing cooperation between clusters in Finland and Russia, to explain the national competitiveness factors of both countries, to assess the existing environment for the cluster, to create the machinery cluster map and to create a cluster diamond model by using Porter’s idea of diamond model.

Contribution of each student

Students from Saimaa University of Applied Sciences divided the cluster joint project questions to be individually and jointly answered. Tiina Jokinen answered to question number 1 from Finland’s point of view. Andrei Nosov answered to question number 2 from Finland’s point of view. Analysis of National Competitiveness of Russian Federation and St. Petersburg city was provided by Anastasia Medvedeva and Mark Grishin. Alexander Kovtun

¹ See Appendix 7. Key Russian actors of potential Intelligent Machines Cluster

and Ekaterina Trubochkina analyzed Russian business and institutional conditions with focus on Machinery industry. Sections number 5-7 the result of joint work of both FINEC and SUAS students. The main contact persons were Tiina Jokinen (SUAS) and Anastasia Medvedeva (FINEC), who usually send emails to each other, exchanged information and agreed about the following steps. It was easier this way to keep everything under control.

Limitations of the research

As a limitation of the research could be mentioned the massive amount of information, which cannot be analyzed deeply, because of the lack of time and contribution. Also the unknown business sector set some challenges for finding out relevant information, and analyzing it in a suitable way for this research.

Analysis of the literature

Websites of Finnish and Russian national organizations, companies, universities, research institutions connected with the machinery and mechanical engineering industry were visited and relevant information was gathered from those websites. The lecture material of theories and practices in international business was used as a background material.

Paper structure

The paper can be divided into 2 parts. First part is considered as theoretical (paragraphs 1-4) where authors considered competitiveness of both countries and border regions and assessed business environment for the trans-border cluster. Second part is practically oriented (paragraphs 5-7). This part begins with cluster and factor analysis. Here were considered machinery industry of both countries. It allowed authors familiarize with existing companies and clusters in this field and determine possible extent of cooperation. In the paragraph 6 we present a cluster map with focus on machine building companies, governmental institutions and research centres. Last parts were concentrated on factor analysis with evaluation of opportunities and constraints for the future cluster to grow.

1. National competitiveness of Finland

1.1 Country diamond model by M. Porter

Finland is a constitutional republic with a population of 5,4 million people and size of 338 145km² (Suomi-tietoa). Finnish GDP in year 2011 was 189,4 billion euros of which the industrial output was 17,3% (Tilastokeskus). Finland is a member of European Union since year 1995 and abides by the common legislation and rules besides the national ones. Competition between different Finnish regions is hard when it comes, e.g. to the investments. When thinking about Finnish national competitiveness and competitiveness of the Finnish-Russia border region using Porter's country diamond model we can point out elements, which allow us to analyze the existing environment for clusters.

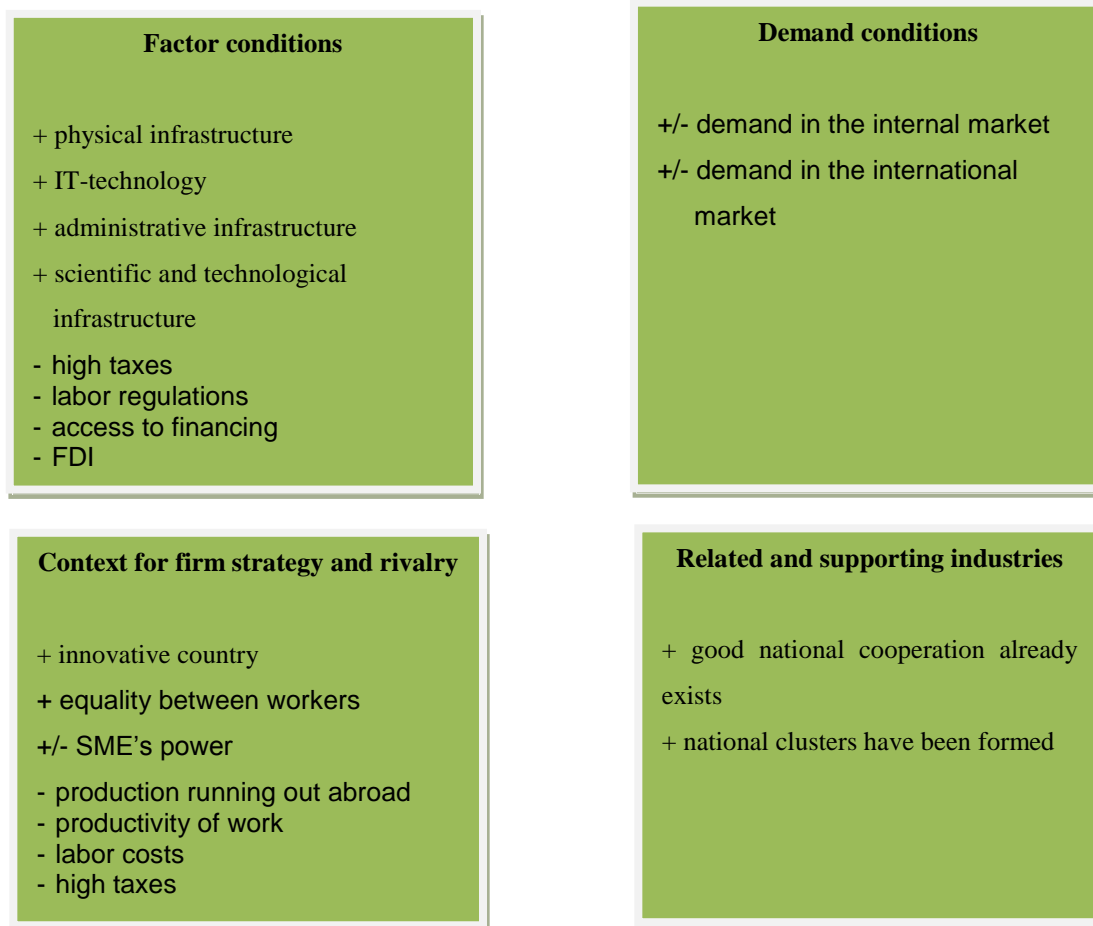


Figure 1. Finnish national competitiveness and competitiveness of the Finnish-Russia border region using Porter's country diamond model.

Factor conditions include e.g. the physical infrastructure, information technology infrastructure and administrative infrastructure, scientific and technological infrastructure. Physical infrastructure, such as roads, waste management, energy systems, parks, airports, harbors, is on an excellent level in Finland and in the border regions. It is well connected by road and rail to North West Russia. There are good railway connections between Lappeenranta and St. Petersburg. You can also reach the North-West Russia by bus from Lappeenranta region. There exists also water way (via Saimaa canal) to Vyborg and St. Petersburg from Lappeenranta. From Lappeenranta international airport it is possible to fly to St. Petersburg via Riga, Latvia.

Also IT-technology is highly developed in Finland. The administrative infrastructure meaning legal system in Finland is reliable and similar in each part of the country. Scientific and technological infrastructure in Finland is concentrated in universities and research institutions. In Finland the workforce is adequately educated. In Lappeenranta region there are Lappeenranta University of Technology and Saimaa University of Applied Sciences which have good scientific and technological knowledge and have done cooperation with the universities in St. Petersburg for many years. Both universities have organized possibilities to do studies jointly with partner universities in St. Petersburg. The education in Finland is commonly on a high level. Skilled workforce is also available.

Weaknesses in factor conditions are the high tax rates, restrictive labor regulations and difficult access to financing (World Economic Forum, Global Competitiveness report.) Apart from these factors, we would also like to pay attention to low inward of foreign direct investments to Finland.

The **context for firm strategy and rivalry** means rules, incentives and norms governing the local rivalry. Finland is ranked as highly innovative country in the world. The importance of SME's is the basis of Finnish economy. Nearly half of the Finland's workforce is working in the SME's. The SME's are also acting a significant role in Finland's export trade. Direct export (vs. indirect export) is the most used form of exporting from Finland. (Confederation of Finnish Industries.) The biggest companies by size and amount of employees in Finland have a trend to cut down their workforce and move the production abroad, e.g. to China in order to save costs.

Finnish industry's cost competitiveness has weakened from the banner years. The productivity of work is declining when compared to other countries. The labor costs have grown more than in other OECD countries on average. Although euro has weakened the relative unit costs have been quite stabile. If we compare internationally, disparities in incomes are quite small and working time is short in Finland, but at the same time the taxation is tight and there is a small difference in incomes between working people and unemployed people (good social benefits). (Confederation of Finnish Industries.)

Finnish companies in the field of technology industry are often forerunners when developing customs and procedures according to the sustainable development. The business activities are developed in entirety, where environmental issues will be connected to the strategy, concepts and innovative. The environmental technology will offer great possibilities to companies to growth and specialization. (Teknologiateollisuus ry.) The products of machinery and mechanical engineering are regulated with different directors and statutes by the European Union. One of the basic knowledge of the company's internationalization process is the awareness of standardization. (Teknologiateollisuus ry.)

Demand conditions include buyers in national and international markets and internationalization of internal demand. Machinery and mechanical engineering industry employs around 125 000 people in Finland. It is the largest technology industry in Finland with a turn overs of 24,4 billion euros. Products produced by machinery and mechanical engineering are e.g. cruise liners, engines for ships and power plants, pulp and paper machines, rock and mineral processing equipment, lifts, hoists and cranes, forestry and agricultural machinery and small metal products such as scissors. The biggest Finnish companies in the machinery and mechanical engineering are e.g. Abloy, Cargotec, Finn-Power, Fiskars, Glaston, Kone, Konecranes, Metso, Normet, Oras, Patria, Pemamek, Ponsse, Stala, STX Finland Cruise, Valtra and Wärtsilä. (Teknologiateollisuus ry.) In year 2012 the turnover of Finnish companies acting in field of machinery and mechanical engineering was around 14 % higher than last year and the total turnover was around 28 billion euros. New orders have been on a good level and the basis of the orders has become stronger in the past few months. (Teknologiateollisuus ry.)

Related and supporting industries consist of competitive supporting industries, specialized subcontractors' value to the customers and possibilities for new cooperation. In Finland the subcontractors act a significant role in machinery and metal engineering industry. Most of the companies are SME's and have different ways of cooperation with their clients. The

companies can act e.g. as a system supplier, contract manufacturing or component supplier. (Teknologiateollisuus ry.)

1.2 Machinery and mechanical engineering industry clusters in Finland

It is very popular for the companies acting in machinery and mechanical engineering in Finland to create cooperation networks and produce total solutions to meet the customers' needs. Using the good cooperation network allows companies to concentrate on their main activities and create new working places for the subcontractor companies. (Teknologiateollisuus ry.)

In year 2008 Finnish international and national companies acting in the field of machinery and mechanical engineering and Finnish academic research institutions established a Finnish Metal and Engineering Competence Cluster Ltd. (FIMECC) (Fimecc Oy.) FIMECC is a company which has got the national status as Strategic centre of science, technology and innovations (Teknologiateollisuus ry.) FIMECC acts as an innovation platform for the companies and boosts cooperation between companies and research institutions. The main objective of this cluster is to increase added value of innovation activities and R&D investments through FIMECC activities. The shareholders of FIMECC are e.g. Kone, Konecranes, Cargotec, Andritz, Outotec, Metso, Ruukki and Raute. Research institutions are represented by e.g. Aalto university, LUT, VTT, Tampere University of Technology (Fimecc Oy.)

In Finland the clusters are also controlled by the government. Special, fixed term Center of Expertise Programs, aim at focusing regional resources and activities on development areas of key national importance, meaning that every region is involved in clusters, which usually are related to the main strategies of the region. The Centre of Expertise Program is implemented by 13 national competence clusters, each of which comprises four to seven regional centers of expertise. Centers of Expertise within each cluster have jointly prepared Program documents tailored to the needs and opportunities of enterprises in the area of other innovation system operators. Key partners include enterprises, universities, universities of applied sciences, research institutions, technology centers and various financing bodies such as cities, municipalities, regional councils, TE Centers and their technology development departments, alongside state provincial offices. (OSKE, Centre of expertise.)

1.2.1 Intelligent Machine cluster in Finland

South-East Finland is a member of Intelligent Machine cluster, which includes following focus areas: mobile work machines, machines and devices for agriculture and forest industry, machines and devices for the food industry, special vehicles, factory automation, lifting, moving, and logistics, machines and devices for process-industry use and coating and corrosion prevention. (OSKE, Centre of expertise.)

The purpose of the Intelligent Machines cluster Program is to transform Finland into a leading country with international networks in the field of development and manufacture of intelligent work machines by 2013. The cluster Program is creating a Europe-wide co-operation network in which Finnish companies will be central operators. (OSKE, Centre of expertise.)

Machine-building requires strong expertise in technology and capabilities for rapid response to demanding customer needs. The intelligence of the machines, the new design methodologies, investment in the service business, and good management of the product's

life cycle are the central factors for success now and as these requirements grow in the future. The challenges can be met only through smooth cooperation. Solid expertise and a pioneering spirit provide the companies and research institutions participating in the cluster Program with competitive advantages and aid in fast growth and internationalization. (OSKE, Centre of expertise.)

The cluster concentrates on developing the field in all phases of the life cycle of the intelligent machines, from product design to development of the flexible production needed for manufacturing the machines, and of the necessary logistics and business expertise. (OSKE, Centre of expertise.)

Inside the Intelligent Cluster a Forum for Intelligent Machines (FIMA) has been created. FIMA is a network for mobile work machine manufacturers, specialist companies, system integrators and research institutes. It promotes and outlines research and product development in the field in accordance with this industry's needs. There are 8 big companies, 21 small and medium-sized companies and 5 different universities and research centers and 3 development organizations participating in the Intelligent Machine Cluster in Finland. Nearly all Finnish biggest machinery companies e.g. John Deere Forestry, Gargotec Finland Oy, Rockla Oy, Rautaruukki Oy are members of FIMA. (Teknologiakeskus Hermia Oy.)

2. Assessment of Finnish national institutional and business environment for the machinery trans-border cluster: PESTLE analysis²

The country analysis report on Finland provides a wide array of analytical inputs to analyze the country's performance, and the objective is to help make decisions for co-operation between Finland and Russia. The report analyzes the political, economic, social, technological, legal and environmental (PESTLE) structure of Finland.

- The political landscape discusses the evolution of the political scenario in Finland in current period. The economic, social, foreign and defense policies are considered in the political landscape section. It also discusses the performance of the country as per World Bank Governance Indicators.
- The economic landscape describes the evolution of the economy of Finland. It also explains the financial system in the country, especially with regard to financial authorities/regulators.
- The social landscape covers the demographics, education and healthcare scenario in Finland.
- The technological landscape discusses the structure and policies in terms of Intellectual property, research & development, technology agreements/pacts; and policies related to the promotion of technology in Finland.
- The final landscape examines the structure of the judicial system, legislation affecting businesses, tax regulations, labor laws, trade regulations and corporate governance in Finland.

Finland has a largely free-market economy and high technology industries. The largest sector of the Finnish economy is services at 65 %, followed by manufacturing and refining at 29.3 % - principally the wood, metals and engineering. Trade is an important, with exports equaling almost one-third of the GDP. Since 2011, the Finnish economy has struggled to recover that some sectors—including healthcare, technology services, high-tech industry

² See Appendix 1. PESTLE and SWOT analyses for Finland

have grown and become more productive, creating jobs. The need for productivity has resulted in the birth of new technology-driven industries. Among these is robotics; a large segment of robotics has grown to support productivity in industries such as

- Windpower: investment and construction boom initiated by the launch of a feed-in tariff in 2011
- Biomass: strong biomass-focused technology value chain ideal for innovation and technology sourcing
- Energy efficient construction: new building regulations open up an untapped market
- Water sector: infrastructure renovation market worth €4 billion and etc.

3. Russian national competitiveness and competitiveness of the border region

3.1 National competitiveness of Russian Federation: country diamond model by M. Porter³

Russia is the largest country in the world, covering more than one-eighth of the Earth's inhabited land area. Russia is also the world's ninth most populous nation with 143 million people as of 2012 (www.gks.ru – Official website of Russian Federal State Statistics Service). The Russian economy is the world's ninth largest by nominal GDP and sixth largest by purchasing power parity (www.imf.org – Official website of International Monetary Fund). Russia is one of the world's fastest growing major economies (CIA World Factbook 2011). The country is a member of such international organizations as G8, G20, WTO, CIS, etc.

In the following sub-sections we consider five factors of Country Diamond Model by M. Porter. This will allow us to get more details about the competitive advantages of Russian Federation due to the certain factors available to it.

3.1.1 Factor Conditions

Natural resources

Perhaps the single most particular feature of the Russian economy are its endowments with a vast array of natural resources, particularly oil, gas, coal, and precious metals as well as abundant agricultural land, forests, and water⁴. But Russia's wealth in natural resources is not limited to hydrocarbons. The country also controls 8.4 % of the world's water reserves, 8.1 percent of its forest cover.

With energy prices skyrocketing over the past years, hydrocarbon resources became an increasingly important driver of the Russian economy. Prudent management of resource wealth has left the country with large international reserves and low public debt, which not only enabled Russia to preserve liquidity and macroeconomic stability throughout the economic crisis of 2008–09, but also provides both room for investment to enhance the country's future competitiveness and an economic environment conducive to reform.

³ See Appendix 2. Country diamond model by M. Porter for Russian Federation

⁴ See Appendix 3. Resource Endowments in the Russian Federation

Physical infrastructure

The transport network of the Russian Federation is one of the world's most extensive⁵, however physical infrastructure is inefficient and not keeping pace with demands of a growing economy, particularly in high-growth regions. Weak infrastructure also reduces the degree of effective local competition and cross-regional specialization within the Russian economy. Demand for physical infrastructure (highways, railroads, airports, etc.) is very high in Russia that's why innovative solutions are extremely important in the application of technology; the process of planning, reconstruction, repair; and the management of infrastructure.

Geographical location and exports opportunities

Russia's geographical location offers a great potential for export development. The country is geographically close to the largest markets in the world: the European Union (EU) to the west and China, India, Japan, and the United States to the east and south. Thus markets with close geographical proximity to Russia account for over 36 percent of global GDP. One of Russia's key obstacles to increasing exports is the tariffs Russian exporters face in target markets, which remain high in international comparison. The World Trade Organization (WTO) accession will allow the country to reduce these barriers and further develop exports.

Education and workforce

Russia has one of the best educated populations in the world. Inherited from the Soviet Union, which stressed universal access to education at all levels, the country benefits from high levels of education present in the labor force. As a result, Russia has a particularly high potential for developing R&D activities and high-end manufacturing and service sectors. In the area of human resources, skill shortages are emerging throughout the economy despite the high level of formal education of the Russian labor force. The growth of the Russian economy has far outpaced the ability to provide employees with the needed skills, and problems in recruiting and retaining employees with the appropriate skills have become one of the major growth constraints for companies operating in Russia.

3.1.2 Domestic Demand Conditions

The large size of the domestic market can be considered one of the biggest advantages of Russian Federation. With a GDP per capita of US\$10,521 in 2010 (international \$15,806 in purchasing parity terms), over the 2000–09 period Russia achieved a relatively high GDP growth rate of 5.5 percent, which put the country on the path toward convergence with OECD levels. Thus the combination of a large population (about 143 million. people) (www.gks.ru – Official website of Russian Federal State Statistics Service) and a rather high (by international standards) level of per capita income makes Russia's consumer market one of the largest in the world—it is one of the top 10 countries in this area (Russia Competitiveness Report 2011, p. 75). This inevitably leads to significant localization of consumer goods production in Russia, which could be further increased if business development conditions were more favorable. In turn, this production would constantly create a demand for new technologies, processes, and innovations for the production of consumer goods. Companies can rely on a large-scale and accessible market for sales of new products, therefore achieving effective economies of scale. A large market size has also other

⁵ The national web of roads, railways and [airways](#) stretches almost 4,800 miles (7,700 km) from [Kaliningrad](#) in the west to the [Kamchatka Peninsula](#) in the east, and major cities such as [Moscow](#) and [Saint Petersburg](#) are served by extensive [rapid transit](#) systems

advantages, in particular higher attractiveness to FDI, which brings many spillover effects such as transfer of management and technological know-how.

Obviously Russia's demand conditions are slowly improving. Consumers are becoming more sophisticated in their tastes and preferences. After the breakup of the Soviet Union, many people have traveled to the U.S. and Western Europe and have been introduced to the new shopping and service standards. Raising real personal incomes and increasing availability of consumer financing have contributed to increasing consumer spending, thus improving the overall sophistication of buyers.

3.1.3 Related and Supporting Industries

As a large country that historically wasn't well integrated into the world economy, Russia has a high presence of local suppliers and supporting industries. The evidence suggests, however, that such industries have rarely developed into functioning regional clusters that drive productivity and innovation. (Competitiveness at the Crossroads: Choosing the Future Direction of the Russian Economy by Michael E. Porter and Christian Ketels, with Mercedes Delgado and Richard Bryden, p.61)

3.1.4 Context for Strategy and Rivalry

As in most former transition economies, the Russian Federation sees promoting and protecting competition as a crucial element of its economic policy; competition is even protected by the constitution. Many reforms were introduced in Russia to foster competition and regulate markets, such as the new competition law of October 2006, when the Federal Antimonopoly Service was established. However, because of both the legacy of the Soviet Union and the transition process, Russia continues to display largely inefficient market mechanisms for goods and services.

In Russia, entrepreneurship appears to be less developed than in other economies. In economies with efficient markets, about 5 to 20 percent of firms enter and exit the market each year, whereas in Russia, only about 5 percent of firms were new or ceased operation. There are a number of indicators that point to the reasons for this development. Administrative barriers are often mentioned, and indeed it takes 30 days and nine procedures to set up a business in Russia, which places the country 93rd and 88th, respectively, among 139 economies.

A distortionary tax system or an overly high tax burden can also significantly limit competition in a country, as it distorts the incentives to invest and develop an enterprise. In Russia, the burden of corporate taxation appears fairly high, reaching 48 percent according to the World Bank - a significantly higher level than in most EU countries.

In addition to domestic competition, foreign competition is important in fostering productivity, as it forces the domestic business sector to face competition from highly efficient global enterprises from their industry. The two most important channels for this interaction are trade and FDI inflows into the economy. Russia ranks a low 135th in the related overall Global Competitiveness Index category (Global Competitiveness Report 2011-2012), a ranking that reflects a number of barriers to trade and investment. Indeed, import tariffs, at 11.5 percent, continue to be among the highest in the world; these are approximately equally applied to agricultural and non-agricultural products. Overall, the Russian business community considers trade barriers in general to be high, notably because

of non-tariff measures, for which the country achieves a rank of 96th out of 125 countries in The Global Enabling Trade Report 2010.

FDI is equally constrained by barriers that are mainly related to regulation. As a result, the prevalence of foreign ownership is low as perceived by the local business leaders. One of the reasons for this is the law on the protection of strategic sectors of 2008, which limited FDI in key sectors of the economy. WTO accession will open the country to trade and foreign investment and limit, to some extent, the distortive effect of subsidies and the role of the state.

3.1.5 Government

Despite improvements to the regulatory framework, competition remains weak. Unlike in China, India, or many OECD countries, in Russia markets tend to be dominated by a few large firms and the intensity of competition does not contribute to efficiency. One reason for the weak competition in the domestic markets is the overbearing role of the state in the Russian economy. Two aspects are important in this context: state-owned enterprises and direct interventions in markets by the state.

State enterprises play a dominant role in the Russian economy and are heavily favored by the state, more than in China, India, or Brazil. In addition to exerting control over state enterprises, the Russian government intervenes in markets via price controls to a significantly higher extent than governments in OECD countries. Almost half of the differential in product market regulation between the OECD and Russia can be explained by the role of state control. Russia uses significantly more command and control regulation and, to an even higher extent, price controls.

Russian business lags behind its peers in terms of business sophistication. This poor showing is caused in part by the limited presence and extent of clusters in the country. Also contributing is a product portfolio that displays low value-added both because it is based mainly on exploiting natural resources and also because businesses make little use of advanced management techniques.

We looked through the overall National Competitiveness of Russian Federation and would like to have a closer look not at the Northwest Region as the whole but at St. Petersburg in particular. Our choice is conditional on city's first place in shipping of machinery production, counting for 8.4% of the country's volume.

3.2. Competitiveness of St. Petersburg city: SWOT analysis⁶

Saint Petersburg is the second largest city in Russia and the fourth largest in Europe by population. This factor alone gives the city important advantages which include a large market size, a more diversified economy, and better transport accessibility. High population density creates better economic conditions (per capita) for the development of physical and institutional infrastructure. High density also attracts economic activities with a higher added value. One of the results of this is that living standards in St. Petersburg are one of the highest in the country.

⁶ See Appendix 6. SWOT Analysis Table for St. Petersburg city

But the large size also creates some problems. The most obvious of them is probably insufficiently developed transport infrastructure in the city that causes traffic jams and large time losses associated with intra-city trips. In St. Petersburg, live more than 4.5 million people. Over 70% of city dwellers have higher or secondary (specialized, technical) education. Around 2.5 million of working-age population (90%) is employed in various sectors of the urban economy. The unemployment rate in St. Petersburg - one of the lowest in Russia (0, 8%).

According to the data issued by the Committee for Economic Development, Industrial Policy and Trade, St. Petersburg ranks the fourth among major economic regions in the Russian Federation. Gross regional product of the city has increased in 2011 in comparison with the pre-crisis level and reached 1.8 billion rubles, that is by 5.1% higher than in 2010.

The city has a well-developed small business sector - St Petersburg has 369 small businesses per 100,000 residents, which is more than three time higher than the average value in Russia. We added the strong small business sector as one of the city's strengths to the SWOT table.

Important strength of St. Petersburg is its location, and there are several aspects of this generic strength. First, the city is a large sea port and the western gate to Russia. This helped St. Petersburg to become a transit center for Russian exports and imports. Second, the city is located in the rather successful Baltic region. In particular, St. Petersburg is conveniently close to Finland and has good transport connections with it. Because Finland is the only high-income country with which Russia has a common land border, it opens ample opportunities for St. Petersburg to attract capital, technologies, and management know-how from Finland (and from other Baltic countries).

It should be mentioned that St. Petersburg – the largest scientific and educational center of the north-east Europe. The city has more than 100 research institutes, many of which have the status of “federal” or “head”, about 100 academies and universities, more than 160 institutions of primary and secondary vocational education, 766 schools.

Critically important for the city is the fact that the Russian President, Prime-minister and many other top policy makers came from St. Petersburg. Strong pressure and support from the federal center was instrumental in moving the Constitutional Court of Russia and headquarters of some large state-owned companies from Moscow to St. Petersburg, and in getting significant investment resources to modernize the city’s infrastructure.

A vast majority of Russian financial and management resources are concentrated in Moscow, and despite all weaknesses of the business climate in the capital it is very difficult for other cities to compete with Moscow (with purely market-based instruments). One example of this inequality is an outflow of the best professionals and managers from St. Petersburg to Moscow. Nevertheless, relative proximity of St. Petersburg to Moscow is one of the important strengths for the city (planned improvements in transport infrastructure connecting these two cities should help to strengthen this advantage).

We should mention dependence of city’s economy on energy prices as one of the critical threats for St. Petersburg, oil prices rose in this period, and that undoubtedly benefited the city’s budget as well as its economic growth in the short-term.

Continue talking about opportunities and threats for St. Petersburg’s economic development it should be highlighted that relationship between Russia and the EU plays a very important role. For example, visa free travel between Russia and the EU would substantially increase not just tourist inflow to the city but also help to intensify business contacts. On the other hand, worsening of the relationship could do a lot of damage to trade and investment connections.

On August 31, 2011 St. Petersburg received a new governor - Georgy Poltavchenko, who prior to this served as a presidential envoy in the Central Federal District. On the same day Russian President Dmitry Medvedev appointed a new envoy to the Northwestern Federal District (which includes St. Petersburg among other regions) - Nikolay Vinnichenko. After almost 8 years at the helm of St. Petersburg, the previous governor Valentina Matvienko went on to become chairwoman of the Federation Council of Russia, the upper house of the Russian parliament This change in leadership creates some risks and uncertainty for investors in St. Petersburg since the priorities of the new governor may be different than the previous one. Although we do not think that these risks are significant, they can still lead to the postponement of some investment decisions in the city. On the other hand, in June the government of St. Petersburg adopted a program for improvement of the city's investment climate for the period of 2011-2015. This program aims to make St. Petersburg the second largest recipient of FDI in the Russian Federation. Its more specific objectives include a reduction of administrative barriers, modernization and development of physical infrastructure, and better city marketing. (cemat.aalto.fi- official website of Aalto University, St. Petersburg in the first half of 2011: biannual economic report)

4. Assessment of Russian national institutional and business environment for the machinery trans-border cluster: PESTLE analysis

POLITICAL factors

1. Mild political instability in Russia (opposition's protests, violation of the political and civil rights, issues related to the election legitimacy, etc.) influences on the political image and foreign investors readiness to invest in Russian economy.
2. Russian Governmental Foreign Economic Strategy 2020 lays down the directions of future foreign economic development as the process of improving Russian position on the high technologies market in the respect of following:
 - entrance to the new high technologies markets including machinery;
 - sustainable finance aid for exporters of high technology goods;
 - creation of post-sale service for complex machinery equipment exported to the foreign countries and constant organization of scientific researches and R&D;
 - support and motivation of production co-operation and joint-ventures with foreign companies;
 - attraction of foreign investments and technologies in process industry;
 - creation of co-operational connections with foreign companies possessing favorable new-market-entry conditions including usage of preferential trade agreements;
 - creation of sustainable mechanisms of the export support for machinery and high technologies goods, elimination of related trade and export barriers.

Realization of above mentioned targets will improve political and economic conditions for investments inflow, cooperation conditions and development of technological and machinery industries in the segment of Russian real economy.

3. Activity of Russian Trade Mission on developing Russian-Finnish investment cooperation results in numerous work groups and meetings aimed to provide Finnish and Russian business with effective mutually beneficial development in different industries

including machinery and its supporting industry (www.ved.gov.ru - Ministry for Economic Development of the Russian Federation).

4. Existence of current significant joint projects in the field of machinery (Finnish innovation projects in machinery industry in Penza region (Wartsila) and in Saint-Petersburg (Technopolis)) as well as future potential projects in different innovation fields of machinery industry creates a prospective basis for the future mutually beneficial cooperation. It might change the paradigm of Russian resource-based economy (www.ved.gov.ru - Ministry for Economic Development of the Russian Federation).
5. Regional development policy in Northwest region provides investors and authorities with a clear vision of necessary changes which will help to increase investment attractiveness and allow attract foreign capital investments in regional economy.
6. WTO membership (or Accession to the WTO) will continuously decrease custom tax rates during the next years and then will create advantageous conditions for increasing of foreign trade, including trans-border cooperation and joint ventures.

ECONOMIC factors⁷

Macroeconomic factors

1. The GDP growth index in 2010 and 2011 was 4,3% (54,369 bln. rubles in the current price level). Russia is the 6th biggest economy in the world.
2. Total export volume in 2009 was \$471.6 bln., in 2010 – \$303.4 bln., in 2011 - \$400.4 bln. Geographical structure of export is oriented to the countries CIS.
3. Total import volume in 2009 made up \$291.9 bln., in 2010 – \$191.8 bln., and \$248.7 bln. in 2011. Geographical structure of import is oriented to the countries of EU.
4. Russia is net exporter according to the positive balance of trade.
5. Official inflation rates in 2009 and 2010 made up 8.8%, in 2011 – 6.1%. Nevertheless the real price level, based on the extended consumer basket, is significantly higher and shows continuous growth year by year.
6. The Russian Central Bank interest rate had fluctuated between 8,75% (beginning of 2010) and 7,25% (beginning of 2011), then it raised to 8.25% again in the end of 2011, and finally interest rate fell to 8.0% in the beginning of 2012.
7. The average lending rate in rubles decreased from 14% in the end of 2009 to 7.9% in September 2011. It finally reached 9.2% in the beginning of 2012.
8. The average salary in 2009 amounted 17290.1 rubles, in 2010 – 18637.5 rubles, in 2011 – 20952.2 rubles. In some industries, including machinery and equipment, the process of salary indexation had a time lag compared to the inflation changes.
9. Tax rates show an increasing tendency in relation to the Small and Medium Entrepreneurs (SME). Compared to the EU countries here is a relatively low tax level for corporate business and individuals in relation to the gained income.
10. Workforce in 2009 made up 69.28 mln. people, in 2010 - 69.80 mln., in 2011 – 70.73 mln. Employment rate in 2009 was 62.1%, in 2010 – 62.7% and 63.8% in 2011. Total unemployment in 2009 was 6.37 mln. people, in 2010 – 5.63 mln., in 2011 – 5.02 mln. Unemployment rate in 2009 made up 8.4%, in 2010 – 7.5%, and 6.6% in 2011.
11. Russia is endowed with a vast array of natural resources. It should be noted that country has a huge amount of machinery-related resources as well (ironstone, aluminum, copper, wolfram, manganese nickel, etc.)

⁷ If another is not indicated in this PESTLE analysis, information used is based on the reports of Russian Federal State Statistics Service (www.gks.ru)

12. Russian Federation position in Doing Business Report (2012) is 120th out of 184, compared to 124th position in the last year. According to the Global Competitiveness report 2012-2013, Russia has a status of “transition economy”. Now country is moving from efficiency-driven towards innovation-driven type of economy. Russia takes 66th in 2012 (67th in 2010-2011) position out of 142 in the global rating (www.weforum.org – Official Website of World Economic Forum).

Industry factors (*nymь.pф* - Russian portal containing overall country statistics information)

1. Employment in the machinery industry in 2006 was 1 152 646 people, in 2012 – 810 557 people, forecast for 2018 is 692 996 people. The share of process industry, including machinery, in 2009 and 2010 was 15.2% of total economy, in 2011 – 14.9%. It is a decreasing tendency in both human resources and industry scale.
2. Total number of entities in 2006 was 74 204, in 2012 is 40 438, and in 2018 is forecasting to be at the level of 38 192. It is a result from world crisis as well as technological gap and unsatisfactory demand for machinery goods.
3. Average salary in machinery industry is higher than the country average. It was 10 418 rubles in 2006, 26 079 in 2012, and in 2018 it is forecasting to be at the level of 38 071. Such salary level is seemed to be unattractive for young specialists and professionals.
4. Production volume in Machinery industry in 2006 was 622 520 mln. rubles, in 2012 - 1 061 609 mln., and a forecast for 2018 is 1 374 942 mln. Taking into consideration decreasing number of entities and increasing production volume in recent years, it can be concluded that production process is being intensified, technologies are being improved.
5. Export of machinery related goods in 2009 was \$17879 mln. (5.9% of total exported goods), in 2010 - \$22582 mln. (5.6%), and \$23230 mln. (4.5%) in 2011 (www.gks.ru - Russian Federal State Statistics Service).
6. Import volume in 2009 was \$72669 mln. (43.4% of total imported), in 2010 – \$101823 mnl. (44.4%), and \$146594 mnl. (48%) in 2011.
7. Foreign trade volume tends to increase significantly during next years as the result of accession to the WTO and slump in customs rates. The process industry in Russia, including machinery, is a net importing industry (compared to the export/import proportions throughout last years).
8. Export and import custom duties for the industry will reduce over the next years: for the automobile industry from 30% to 20-15% after 7 years, heavy machinery from 20% to 5% (average), computer software industry to 7,5%-12% after 7 years, agricultural machinery from 15% to 5-10%. It will challenge the current system of the strategic protection of key industries such as air and automobile machinery (www.kommersant.ru - Kommersant business magazine).

Region factors

1. Exports volume in the region was \$11 817 mln. in 2010 and \$20 577 mln. in 2011. The process industry, including machinery, takes 9.4% (2011) of total regional export. Imports volume in the region was \$24 524 mln. in 2010 and \$32 656 mln. in 2011. The process industry, including machinery, takes 43.2% (2011) of total regional import. Foreign merchandise trade of Northwest region with Finland takes 5.2% (2011) and has the import-oriented character.
2. Regional foreign trade of services is export-oriented, especially in process and machinery industry, such as engineering services (3.0% of exported services and 1.7% of imported services), scientific research services (2% of exported services), services for electronic machinery (2.6% of exported services). Export of services in Finland takes 6.7% of total imported services in 2011. It creates preconditions for future trans-border cluster creation where Russia can be a science power force supplier.

3. Workforce in Northwest region in 2009 was 7.1 mln. people, in 2010 - 7.09 mln. people, in 2011 - 7.16 mln. people. Employment rate in the region during last 3 years was higher than country average, in 2009 it was 66.1%, in 2010 -66.3%, and 67.4% in 2011. The Northwest region unemployment rate is at average 8% of total.
4. In the economic centre of district (Saint-Petersburg and Leningrad region) the machinery trade balance in 2011 has increased to 34.2% compared to 2010. The index of industrial growth in this region had been continuously increasing for last years to 9.4% in 2010 and 13.8% in 2011.
5. In the economic centre of district (Saint-Petersburg (Saint-Petersburg and Leningrad region) the nominal salary was 29 522 rubles in 2011. For machinery industry it was 31 123 rubles (the growth compared to 2010 was 14.7%) Relatively high salary rate can be considered as attractive for future professionals.
6. Economic value added in process industry, including Machinery, in 2009 was 21.5% of total EVA in Northwest region, in 2010 - 21.6%. The share of regional process industry is 65% of country total according to the volume of produced industrial goods in 2010. The most significant role process (and machinery) industry plays in Vologda region, Saint-Petersburg and Leningrad region, and Novgorod region.
(points from 1 to 6 are from petrostat.gks.ru – Regional Body of the Russian Federal State Statistics Service in Saint-Petersburg and Leningrad region)

Cooperation and foreign trade factors (*www.ved.gov.ru - Ministry for Economic Development of the Russian Federation*)

1. The place of Finland in Russian foreign trade rating in 2009 was 12th, in 2010 – 13th.
2. Volume of Russian-Finnish trade of goods in 2009 was \$13.1 bln., in 2010 – \$16.8 bln. Volume of Russian-Finnish trade of services in 2009 was \$2.9 bln., in 2010 - \$2.1 bln.
3. The share of innovation production in Russia-to-Finland export in 2008 was 3.4%, in 2009 – 3.6%.
4. The volume of accumulated direct foreign investments from Russia to Finland in the beginning of 2010 was \$66.3 mln. (0.15% of total outcome DFI), from Finland to Russia was \$1.9 mln. (1.75% of total income DFI).
5. The number of foreign trade restrictions in Russian-Finnish trade relations in 2010 was 7 from Russian side and 16 from Finnish side.

SOCIAL factors

1. Population in Russia in 2008 was 142.0 mln. people, in 2009 and 2010 – 141.9 mln. people. In 2009 percentage of old age people was 21.2% of total population, in 2010 it raised to 21.6%. Population forecast for 2018 (middle scenario) is 142.096 mln. people. Nowadays there is a mild decrease of population size.
2. In Saint-Petersburg, as in economic and cultural centre of the region, population was 4.8607 mln. people in 2010, 4.8993 mln. in 2011 and in the beginning of 2012 – 4.9532mln. people (petrostat.gks.ru - Regional Body of the Russian Federal State Statistics Service in Saint-Petersburg and Leningrad region). In Saint-Petersburg demography situation is in opposite to the average country's one providing economy with significant and increasing labor and consumer market.
3. Workforce migration from Finland to Russia in 2008 was 174 people, in 2009 – 141 people, in 2010 – 178 people. Migration from Russia to Finland in 2008 was 620 people, in 2009 – 685 people, in 2010 – 517 people. It creates spillover effects and cultural exchange.
4. Workforce is concentrated in Saint-Petersburg and Leningrad region (at the level of 12% of total), in Vologda region (8.5% of total) and Arkhangelsk region (8.7-9.0% of total).

5. The highest employment rate in Northwest region is in Saint-Petersburg (70.5%).
6. The lowest unemployment rate in Northwest region is in Saint-Petersburg (on average from 4.1% to 1.9% during last 3 years).
7. Gender structure of workforce in the process and machinery industry is following: 58% male, 42% female. Thus, gender discrimination plays a negligible role.
8. Touristic turnover in 2011 in Russia was 4415 thsd. people (912 thsd. tourists).
9. Business activity among population in Russia in 2009 was 67.8%, in 2010 – 67.7%, in 2011- 68.3%. Business activity in the region prevails over the average country level and made up 70.5% (2008 -2011).
10. Social and cultural factors in the region are not in conflict with Finnish. Consequently, it leads to a cultural spillover. There are Finnish national theatres and museums on the territory of Northwest Federal district in different regions such as Karelia, Saint-Petersburg, etc. In Finland many workers can speak Russian, in some cities (especially next to border) as Lappeenranta, Imatra, Helsinki, etc. Russian rubles now are officially legal in use. There are no special cultural differences, laws or habits which can prevent Russia and Finland from effective business communication and trans-border cooperation.

TECHNOLOGICAL factors

There are two main factors, which affect development of R&D: the amount of funding and the number of scientists (as a prospective opportunity for young scientists).

Amount of funding (% of GDP).

According to World Bank Data statistics (2009) Russia occupies 30th place in the world with R&D expenses at 1,09% of GDP (average level for five years, 2004-2008)⁸. And this situation remains the same during the last ten years (according to statistics). According to the Global R&D Funding Forecast performed by Battelle and R&D Magazine, global R&D spending will increase in 2012 with strong growth in emerging economies and stable growth in established economies (www.battelle.org/docs . 2012 Global R & D Funding Forecast). Nevertheless Russia will remain on its current position, but will take 11th position by absolute value of R&D expenditures (26,9 bln.\$ US).

Number of R&D-related personnel

Researchers in R&D are professionals engaged in the conception or creation of new knowledge, products, processes, methods, or systems. Russia takes 20th place worldwide with 3 152 researchers per million people between Switzerland (3 320 res./mln.p.) and Netherlands (3 074 res./mln.p.). There is the slightly decreasing tendency.

Technicians in R&D participate in R&D by performing scientific and technical tasks involving the application of concepts and operational methods under the supervision of researchers. Russia occupies 24th rank with 487 tech./mln.p. between Bulgaria (492 tech./mln.p.) and Portugal (471 tech./mln.p.). In contrast to the global trend, number of technicians in Russia reduced year by year following the same demographic tendency.

Scientific and technical journal articles refer to the scientific activity in the following fields: physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences. Russian scientists have published 14'016 articles in 2009 in different field (like Netherlands or Brazil). The leader of rank – USA published about 800'000 articles per year.

A high-technology export is export of products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery.

⁸ See Appendix 4. Indicators of technological development in Russia

Russia placed to the 31th position (\$ 5'193 mln.) in comparison with China (1st place, \$ 406'090 mln.), Germany (2nd place, \$ 158 507 mln.) and United States (3rd place, \$ 145 498 mln.).

Authors would like to consider the level of expenditures on organizations' technological innovation by sectors (mln. rub.) in order to realize in what industries research activities are the most demanded. Also we are going to look at the expenditures on technological innovations in the total volume of goods produced by sector to have an idea what industries require investments into R&D most of all.

Total expenditures on technological innovation in Machinery, production of electrical, electronic, optical equipment and vehicles increase year by year and amounted 80 mln. rub in 2011. Nowadays its share is stuck at the level of 14%. According to the structure of investment volume, the most perspective industry for investments is *communication*, where expenditures were significantly increased from 2,36 mln.rub in 2009 to 9,52 mln.rub in 2011.

The share of machinery is decreasing over years (e.g. from 1,7 mln.rub to 1,2 mln.rub in machinery; from 3,13 mln.rub to 1,96 mln.rub in vehicles production). It indicates the absence of high-tech enterprises in these industries in Russia.

Highest R&D rating among regions in the industry

The greatest region by the number of research organizations is the Central district including Moscow (37% of total expenses) and Volga region (16%) as well as Northwest district, including Saint-Petersburg (12%)⁹. Expenditures on R&D in Russian regions show the same situation – the 54% is expenditures of Central district, 15% - the Volga district and 13% - the Northwest.

However, the scientific activity in Russia is conducted not only by business organizations, but also by universities. In Russia there are 29 universities with the given status of “National research University of Russia”¹⁰. A lot of these universities have faculties and departments for education and research in machinery and equipment or in related industries.

The center Skolkovo starts its performance – modern scientific and technological innovation complex aimed to develop and to commercialize new technologies. It is a key element of Russia's modernization and the important instrument for international cooperation. For example, during the conference of business venture Slush in Helsinki, techno park Skolkovo's program has sparked interest, many Finnish startups have a real interest in the opportunity to work in the industrial park in Russia (www.community.sk.ru - Official website of Skolkovo project). But machinery and equipment were not included in the list of key strategic industries for development under Skolkovo cover.

The same picture one can observe with the second science city, Innopolis, - innovative satellite-city of Kazan in Tatarstan, the analog and partner of Skolkovo (www.innopolis.ru - Official website of Innopolis project).

National and international conferences

Specific domestic conferences are regularly held in the field of mechanical engineering, also Russian scientists regularly take part in international conferences held by other countries. For example in 2012 are planned to organize such events like 2nd International Forum "Engineering Technologies 2012" in Zhukovsky in July (www.forumtvm.ru - Official website of International forum “Technologies in Machinery”); "New Materials and Engineering Technologies - 2012" 15th International Scientific and Technical Conference in

⁹ See Appendix 4. Indicators of technological development in Russia

¹⁰ Status is assigned based on the competition, organized by the Ministry of Education and Science

Bryansk, in May (www.bgita.ru - Bryansk State Engineering and Technology Academy); XVI International conference “Advanced engineering technologies”, in December (www.pdzpenza.com - Volga House of Knowledge project) and French “EuroSatory – 2012”, in June (www.mashportal.ru - Machinery Industry in Russia).

Student competition on programing and computer science

Student participation in such competitions shows the country’s potential in hi-tech development. ICPC - the largest contest of student teams programing, conducted by Texas University since 1970 and sponsored by IBM. During the last 12 years (from 2000) Russian students have won seven times (5 times from ITMO, twice – from Saint-Petersburg State University, once – Saratov State University, www.cpc.baylor.edu - International Collegiate Programming Content). Another large international programing contests are Google Code Jam (www.go-hero.net - Statistic date portal) and TopCoder Open (www.topcoder.com - Official website of Community of software developers, digital designers), where Russian participants also occupy leading positions.

LEGAL factors

Legal regulation of cross-border transactions in the Russian Federation includes both international law and national legal regulations, and international laws prevail over national ones.

United Nations Convention on Contracts for the International Sale of Goods (Vienna, 1980) regulates trade relation. Russia also participates in the New York Convention of 1958 “The Recognition and Enforcement of Foreign Arbitral Awards”, in the European Convention on International Commercial Arbitration (Geneva, 1961), in the Convention on international Financial Leasing (Ottawa, 1988), in the Convention on the resolution by arbitration of civil disputes arising from the relationship between economic and scientific-technical cooperation (1972).

National legislation of the Russian Federation consists of:

"State regulation of foreign trade" (08.12.2003 N 164-Federal Law). It defines the basis for state regulation of foreign trade, the powers of the Russian Federation and subjects of foreign trade activities in order to ensure favorable conditions for foreign trade, and to protect the economic and political interests of the Russian Federation (www.base.consultant.ru – Federal law “On the basis of state regulation of foreign trade”).

"Currency regulation and currency control" (21.11.2003, 173-Federal Law), the purpose of which is to ensure the implementation of the single monetary policy of the state, as well as stability of the currency of the Russian Federation and the stability of its domestic currency market as factors of the progressive development of the national economy and international economic cooperation ([www. base.consultant.ru](http://www.base.consultant.ru) – Federal law “On currency regulation and currency control”);

"Coordination of international and foreign economic relations of the Russian Federation" (04.01.99, N 4-Φ3, www.base.garant.ru/179963 - Legal information portal).

The current legislative framework needs to be developed and improved, because of the need both to support a number of legislative areas of activity that are not regulated by the current legislation and to adjust some previously taken steps in this field of law.

The first of the important directions of improvement of Russian foreign trade legislation is to bring it into conformity with WTO rules (www.mchpravo.ru – Portal of International Legislation) when completing the entry process.

The second area of legislation improvement refers to the prevention of economical illegal activity such us money laundering and legalization and to reduce capital flows moving abroad. In order to do this Government created Russian State Program "Development of

Foreign Economic Activity" (2013-2018) (www.ved.gov.ru/vnesheconom - Ministry for Economic Development of the Russian Federation, Integrated foreign economic information portal of Russian Federation).

The program is aimed to:

- increase of 1.5 times the value of exports of goods, including non-energy exports - by 1.6 times, which will allow Russia to gain a foothold in the top ten world exporters
- reduce the share of machinery, equipment and vehicles in exports and output by 10 per cent annual increase in the supply for this group to the middle of the period
- achieve a level of commodity export diversification, comparable with those in developed countries with a high share of primary sector
- double the number of exporting organizations;

ENVIRONMENTAL factors

Machinery industry is a relatively dirty production and requires additional efforts and investments to provide the acceptable level of CO₂ and other emissions and realize social responsibility. The data about water pollutant, CO₂ emissions and forest area indirectly indicate the level of social culture and government requirements about installation of treatment facilities and care of environment.

Russia still has one of the most energy-consuming economies in the world. Russia is the fourth largest user of energy (www.ved.gov.ru/vnesheconom - Ministry for Economic Development of the Russian Federation, Integrated foreign economic information portal of Russian Federation) and the third largest emitter of greenhouse gases. Moreover, low energy efficiency contributes to poor air quality, and Russia has one of the highest CO₂ emissions – 5,3% of the world total (4th rank). At the same time Russia has satisfactory performance of GDP to CO₂ ratio and air pollution (www.ved.gov.ru/vnesheconom - Ministry for Economic Development of the Russian Federation, Integrated foreign economic information portal of Russian Federation) and has on its territory 20.1% of global forest. As for water pollution, Russia is the third largest organic emissions after China and US on the whole and is in the top-ten in metal industry between South Africa, Kyrgyz Republic, Azerbaijan and China¹¹.

In 2009, the Government has developed and adopted the Federal Law № 261-FZ “Energy saving and energy efficiency”, aimed at creation a legal, economic and organizational framework to stimulate energy conservation and energy efficiency (Federal Law № 261-FZ “On energy saving and energy efficiency”). Besides, in the same year government has adopted “The Energy Strategy of Russia until 2030” which should contribute to maximize the efficient use of natural energy resources and potential of the energy sector for sustainable economic growth, improve the quality of life of the population and contribute to the strengthening of its external positions (The Energy Strategy of Russian Federation until 2030, www.energystrategy.ru).

Program’s goal is to reduce the energy intensity of GDP by 40% during 2011-2020 (OECD Economic Surveys Russian Federation, 2011, www.oecd.org). Some experts believe that about 25% of consumption of primary energy resources in Russia can be reasonable and loss-less replaced with alternative renewable energy technologies (OECD Economic Surveys Russian Federation, 2011, www.oecd.org). But as for now Russian contribution to renewable energy supply is 2.8% versus 13.1% world average (OECD Economic Surveys Russian Federation, 2011, www.oecd.org).

¹¹ See Appendix 5. Indicators of favorable environment in Russia

Russia is characterized by significant level of country risk and political instability but at the same time country plays one of the major roles in international political and economic areas. Nowadays Russia is oriented to develop its trade relations with other countries, including such border countries as Finland, and elaborate its foreign trade strategy, which implementation and effectiveness are long-term. Today both Russian government and companies hold many specific events such as official meetings, conferences and exhibitions related to the trans-border foreign trade. Unfortunately there are just a few existing projects and joint ventures in this filed. The situation is expected to be changed in 7-year period after the WTO accession: foreign trade volumes and transparency will be increased, competition will be provided in different industries, including machinery and equipment, etc.

Generally speaking, Russia accumulates significant volume of key economic factors: capital, workforce and natural resources. Russia still plays an important role in international trade even after the World crisis of 2008-2009 still shows relatively stable macroeconomic indicators and their positive trends. Owing to the high level of bureaucracy and red tape, weak infrastructure, mistakes in regional finance planning and budgeting, controversial domestic business policy and other operational-level indicators Russia doesn't take proper place in worldwide business and economic ratings. Social and cultural factors in Russia are characterized by slow increase in living standards and negative demographic tendencies. The machinery industry today can be characterized by decrease of its major technical indicators such as technical capability, number of firms and personnel. At the same time it shows positive changes of some economic indicators, e.g. salary growth, export/import volume increase. These features towards can be considered as an increase of intensive usage with negative future consequences. The Northwest region and its machinery industry show one of the best results over the country and therefore it lets Saint-Petersburg city and Leningrad region to concentrate vital human and capital resources and capabilities, including in foreign trade and machinery development.

Existing business relations with Finland allow us conclude that Finland doesn't play a significant role in the foreign trade of Russian Federation, but at the same time it has an important influence on the Northwest region. Russian investments into Finland prevail over Finland-to-Russia, but trans-border cooperation and trans-border foreign trade of goods and services are sound factors for both Northwest region and Finland economies. In addition, social and cultural exchange between Northwest region and Finland lead to the cultural, social and business spillovers, interconnection strengthening between Northwest region and Finland in different areas of life and business.

In recent years Russian top policy-makers have increasingly emphasized that joining the ranks of the most advanced market-oriented countries requires modernization of the economy. There is a widespread view that it won't be possible in the long term without creation of environment where innovation and investment, including human capital, can flourish. The current Russian government makes efforts for the development of science and innovation (Skolkovo and Technopolis projects, federal programs), but now Russian's position still stay at relatively low level (top-thirty). Among the possible reasons are deficit funding of science since the early 90's, brain drain etc. At the same time Russia has a great potential for its future development due to ongoing development programs, good theoretical base and high- skilled professionals.

The area of legal regulation of economic relations requires further development. First of all Russian legislation must be brought into conformity with WTO rules. Also it's very important to undertake some measures which would prevent economical illegal activity (matters which are not regulated by current legislation).

Environment doesn't make sufficient effect on business activity in machinery, but Russia still stays the largest energy consumer and emitter of greenhouse gases, CO2 etc. Currently government undertakes steps to introduce energy-saving technologies and energy efficiency policies. Besides, according to the specialists' opinion, about 25% of consumption of primary energy resources in Russia can be reasonable and loss-less replaced with alternative renewable energy technologies.

5. Cluster analysis and the cluster map

Our task is to consider possible and existing linkages between Russian and Finnish enterprises in the field of machinery and mechanical engineering. As this field is very huge by itself we have decided to choose one sub-industry and offer ways for Russian-Finnish collaboration.

The choice was made in favor of Intelligent Machines. There is an existing cluster in Finland with following focus areas: mobile work machines, machines and devices for agriculture and forest industry, machines and devices for the food industry, special vehicles, factory automation, lifting, moving, and logistics, machines and devices for process-industry use and coating and corrosion prevention. Unfortunately there is no cluster with such specialization in St. Petersburg so we can't talk about even collaboration between Russian and Finland in these terms. Thereby a close mutual cooperation is a possible way of development for Finnish Intelligent Machines Cluster and good opportunity for Russian machinery industry.

The existing internationalization plans for Intelligent Machines Cluster in Finland is a good start for deeper cooperation possibilities between Finland and Russia in this interesting field of machinery. But we think that it is not easy to develop a good and useful cluster in this field, if the main actors (companies) will not commit their business actions towards close cooperation over the borders. These actions will also need a strong leadership from some of the main companies in order to get the SME's also to be involved in the actions.

From Russian side we have potentially decided to cooperate with well-established Finnish cluster. Thus we'd like to make some assumptions. First of all on the first stage of collaboration with Intelligent Machines Cluster Russian side will accept its targets and strategic areas because this partially answers purposes of Russian Machinery needs. For the Northwest region development of industrial production and mechanical engineering in particular is one of the strategic directions so far as it's focused not only on needs of the region, but also on Russia as a whole.

Especially important for us are Finnish experience in cluster activities and its innovative approaches. We hope it will become a powerful incentive to cluster initiatives in the Northwest region. Nowadays Russian Machinery strongly needs experience, fresh ideas, new approaches, collaboration with international partners that can be provided by certain activities carried out by trans-border clusters.

We didn't have systematic list of Russian enterprises which produce goods suitable for strategic areas of our potential cluster. That's why we analyzed the market of Machinery products and chose most perspective suppliers and machine building companies. With the full list of it you can familiarize yourself in the Appendix 7¹².

The developed engineering infrastructure and high scientific and technical capacity of St. Petersburg is used by the power mechanical engineering enterprises. But analyzing

¹² See Appendix 7. Key Russian actors of potential Intelligent Machines Cluster

companies referred to machinery industry we defined that there are much more *companies engaged with production of spare parts, machine tools, equipment and metal articles* (Russian Industrial Co., Balt-System, Kirov-Instrument, Kirov-Stanmach, Agro-3, Vibrator, Alplast etc.). According to the data given on their official websites products of these companies are competitive, demanded and exported to international markets. For instance, encoders fabricated by SKB IS are widely used in production of machine tool plants, in measuring machines and robotics complexes, automated installations in the electronic industry, in systems of process and production control, in research instrumentation and in various measuring devices. Thousands of enterprises in Russia and CIS countries are consumers of SKB IS's products. Besides 30% of products are exported to USA, Canada, Mexico and many European countries.

Consider *machine-building enterprises* we can't deny the fact that this is not the strongest advantage of Russian side in the framework of potential Intelligent Machine Cluster. Anyway we have very promising and deserving attention machine building companies. Namely those are Kirovsky Zavod, OJSC Power Machines, Elektrosila, Leningradsky Metallichesky Zavod. *Kirovsky Zavod* is one of the largest enterprises in Northwestern Russia. Key areas of Kirovsky Zavod: manufacturing of agricultural and construction machinery, metallurgy, power engineering, metal processing and mechanical processing. *OJSC Power Machines* is the leading Russian producer and supplier of end-to-end products and solutions for the power-plant industry, including engineering, production, supply, assembly, service and equipment upgrades for thermal, nuclear, hydraulic and gas-turbine power plants. The Company takes the 4th position in the world by volume of installed equipment. *Elektrosila* is the largest producer of generators in our country. The equipment produced by the enterprise is well-known in 87 countries of Europe, Asia, North and South America, Africa.

Here authors conclude that Russian enterprises might be strong from the viewpoint of materials delivery and human resources. Authors consider that finished articles should be assembled on Finnish production facilities as its technological potential is higher than Russian.

In Lappeenranta operates a company called *MeVEA Ltd.*, which is one of the members of intelligent machine cluster. This company has been successful in the field of robotics. MeVEA Ltd offers solutions for improving product development and user training. The solutions are based on special know how on real-time simulation of dynamics, multitechnical systems and virtual engineering.

MeVEA's customers and produced products have been, e.g. Forssa Finland Adult Education Centre with crane simulator for educational purposes, Lappeenranta University of Technology with R&D Simulator for research use, Maritime Center Vellamo in Kotka with a Full Mission Solution -simulator for public use (visitors are able to experience the weekday of a straddle carrier operator), Saimaa University of Applied Sciences with Simulation Software to renew and improve teaching methods and other big Finnish metal industry companies, such as Wartsila, Andritz, Normet, Valmet Automotive. In Finland there are several SME companies operating in field of intelligent machines. As an example we could mention also *Exertus Ltd.* in Seinajoki, Finland, producing display products, controllers, sensors and software. Exertus customers are, e.g. Junttan Ltd., which specializes in the design, manufacture and marketing of hydraulic piling equipment, Logset, a forest machine manufacturer, Mantsinen Ltd. manufacturing material handling machines for port and industry, Normet Ltd., which produces underground (mining) machines. *Navitec Systems Ltd.* in Espoo, which produces mobile machinery positioning and guidance. Customers for Navitec Systems are, e.g. Sandvik Mining Ltd., In De Beers Finsch mine in South Africa, Pyhasalmi mine in Finland and Williams mine in Canada. All of these companies are using

navigation system for automated unmanned loaders and dumpers. There operates also *OptoFidelity Ltd.* in Tampere, Finland, which produce machine vision and optical measurement technology products for customers such as: Axis Communications (network video products), Espotel (advanced embedded solutions) and Sick Ltd. (sensor producer for factory automation, logistic automation, process automation) as well as Remion Ltd. (provider of remote monitoring and diagnostics systems). Also many engineering companies offering solutions for product developing, testing, education etc. are involved with the Finnish cluster of intelligent machines. (Webpages of the companies.)

We wanted to list several small and medium size enterprises (SMEs), because we think that those have potential for growth and when developing their businesses these companies would have opportunities to internationalize their business. If we think about possible joint clusters between Lappeenranta and St. Petersburg regions, it is clear that SME companies in Lappeenranta region or in other region of Finland need a strong leader, e.g. one big company in the field, in order to be able to create profitable and continuous business in Russia. It would be easier, that one big company takes care of all the organizational issues (documentation, planning of export etc.) when planning to create a cluster and uses the SME's as subcontractors for the incoming orders, states Mrs. Eeva Pihlajaniemi, the Manager of Internationalization of Lappeenranta regional development company, Wirma Lappeenranta Ltd.

Big companies operating in the field of intelligent machines in Finland are, e.g. the manufacturer of forest machines, John Deere, Cargotec Finland Ltd. which offers solutions for the cargo handling machines, Kone Ltd. concentrated in elevator and escalator industry and Rautaruukki who offers steel, stainless steel and aluminum and mineral products and solutions for building, infrastructure, engineering. (Teknologiakeskus Hermia Oy.)

From Russian side we consider *Saint-Petersburg Innovative Technological Cluster for machine-building and metal-working industry (ITC MM)* as one of the most important partners. With its help we can get access to resources, find reliable potential suppliers and customers. Moreover we consider possibility for ITC MM to become a part of trans-border cluster. Tasks and activities of ITC MM suits main tasks of Intelligent Machines cluster. It unites enterprises-owners of innovative technologies, forms technological platform for machine-building based on best world experience, creates conditions for continuous growth of existing technologies and widen its technological opportunities. ITC MM consists of more than 30 machine building companies and has a strong support of St. Petersburg government. Very perspective partner is *St. Petersburg Machine Tool Industry Cluster (NP KSP)*. The cluster unites almost all producers of machine tool industry and specialized enterprises of the Northwest. The main objective of the cluster is development of joint innovative products from local component parts and ready machine-building technologies within the frames of the life cycle 'R&D – launching into production – serial production'.

The core university and source for skilled labor will be the *Machine-building Institute of St. Petersburg* which is the only technical institution of higher education in St. Petersburg that realizes training and retraining of engineer personnel on the principal of non-stop integrated education. The main directions of educational, scientific and engineering activities are: energy machine-building, technology and automation of production processes, partial preparation production, tribotechnique, corporate information systems, economy and management in machine-building. The Institute absorbed the best traditions of the largest base enterprises' labor bodies which are an integral part of the integrated educational system.

We find very important the fact that both *Federal and Regional Governments* try to support all kinds of innovative incentives and as a result cluster initiatives. Bases of cluster policy of St. Petersburg are worked out for long-term period. It defines purposes, tasks, clustering forms and functions of governmental executive bodies. This policy is focused on creation and support of clusters which unite enterprises, organizations, and scientific institutions in order to ensure high growth rates of St. Petersburg economy. Realization of cluster approach includes measures of standard legal support, administrative and market, investment, financial and budgetary mechanisms as well as information support.

The Government of St. Petersburg applies systematic approach to the development of innovation technology. The city adopted a complex program aimed at developing and supporting a modern competitive regional innovation system. In addition, every year the city hosts the St. Petersburg International Economic Forum (SPIEF), a flagship event which serves a major platform for economic talks between Russian and CIS leaders as well as the world's business elite.

Also there are plenty of organizations in St. Petersburg which support business at different stages of its activity. *Russian Engineering Union* tries to join the Russian engineering industry companies in maintaining and defending the common interests with state authorities, in civil society institutions, as well as in the international arena. *The committee for economic development, industrial policy and trade* is tasked with implementation of innovation policy in St. Petersburg and cluster policy, *Institute of Regional Innovation Systems* assists in development of human resources potential in the sphere of innovation activity both for educational, scientific and commercial organizations and for regional governing bodies.

Collected information about key actors of potential Intelligent Machines trans-border cluster allows us show relationships among them. Thereby was created Cluster map (Figure 2). Despite the fact that some linkages are non-existent at the moment we have decided to include various actors in the ecosystem under well-defined categories. At the core of ecosystem are machine building companies. One of the most important linkages in the cluster is supposed to be industry-research-federal and local government interdependence (elaborated in the Figure 3).

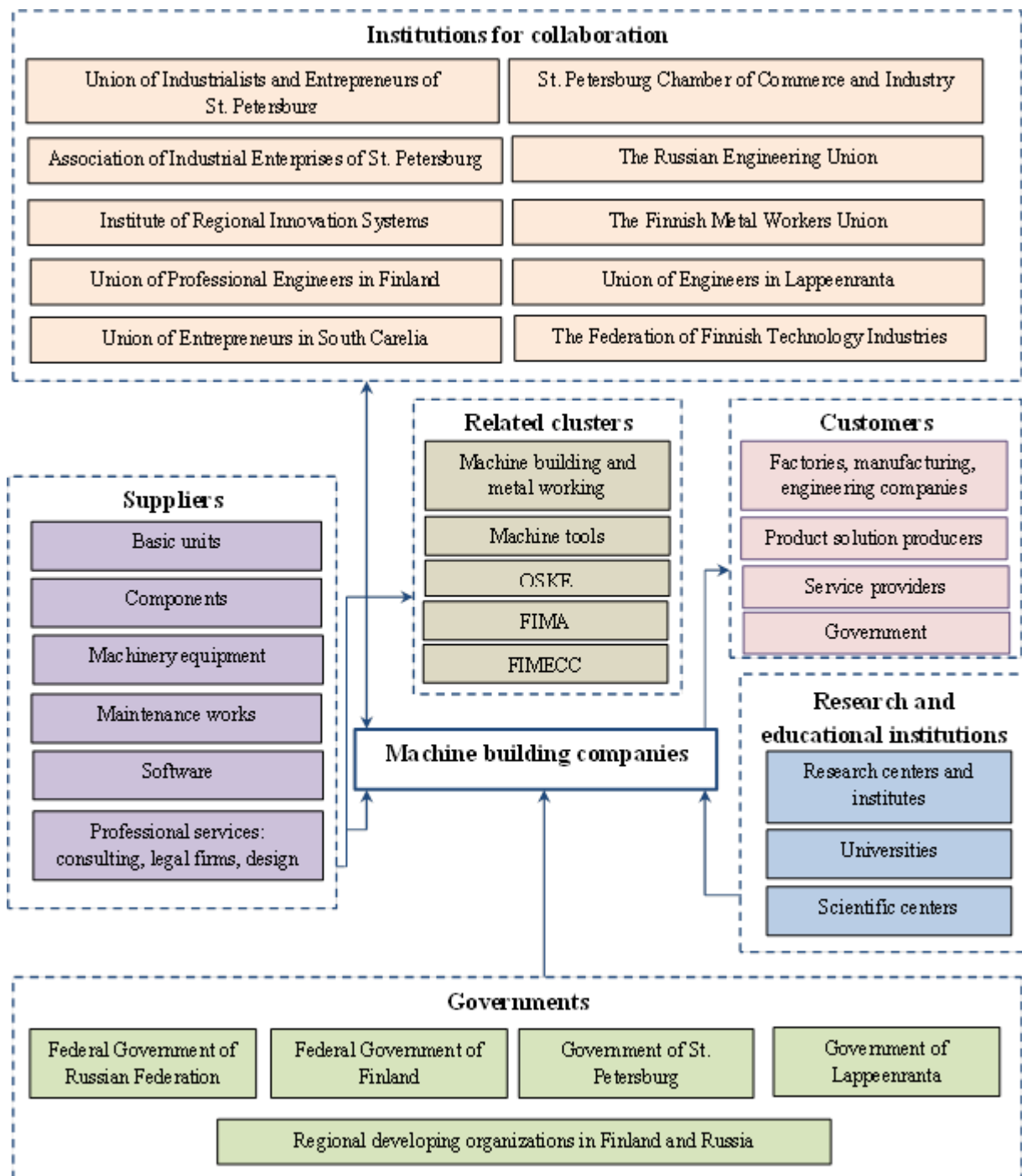


Figure 2. Russian-Finnish Intelligent Machines Cluster Map

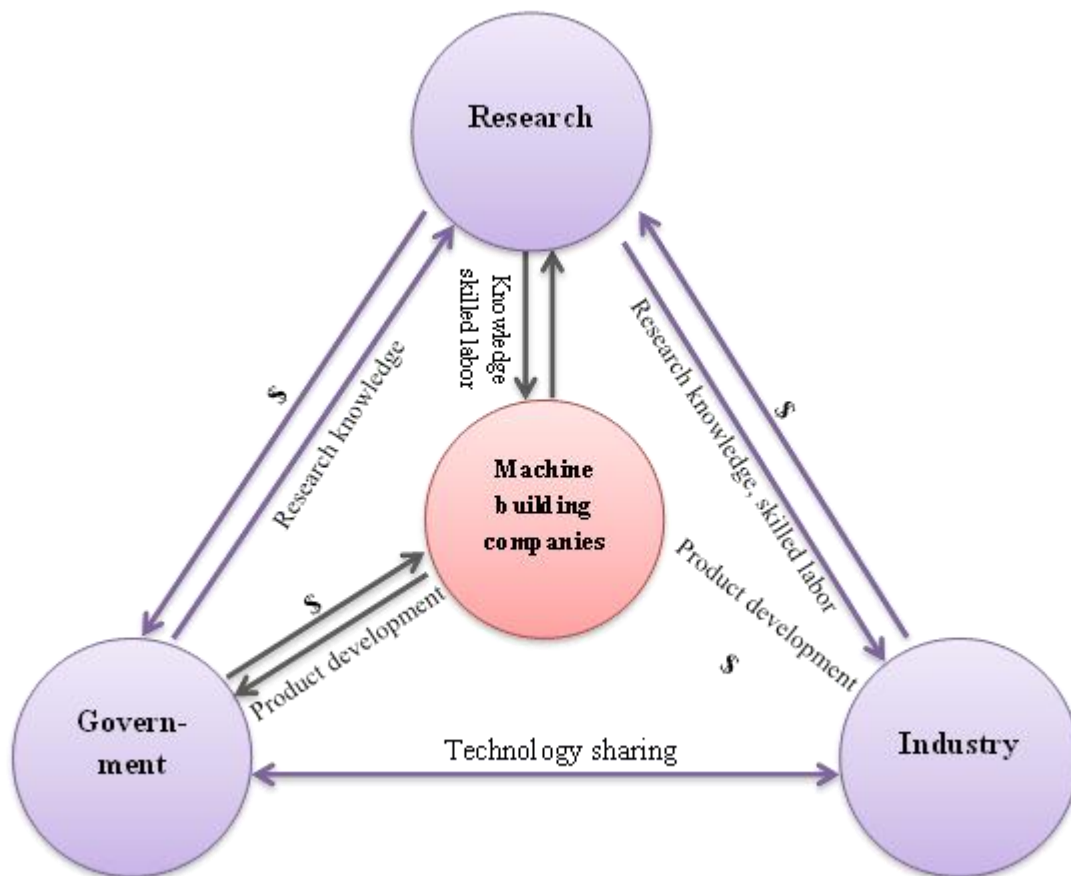


Figure 3. Linkages between Machine building companies and Key Actors

Without any doubts this figure represents Triple Helix model which constitutes that the capitalization and transfer of knowledge is defined by the relationships between three important factors for a cluster development: education, government and business. Among these components there is a relationship of academic-industry-government type in which each component is independent of the other but overlap in terms of innovation and knowledge transfer.

In the Figure represented above we see that Triple-Helix model is based on close cooperation between the three factors:

- universities and research centers are involved in projects, financed by the private sector, to deliver technology, knowledge and to innovate; new business can be created using spin-off technology and financial support from private companies;
- business environment involves higher education in research projects and supports private entrepreneurship;
- government finances research.

The process of globalization stimulates Russian companies to enter the world market, widen the borders of their supplies and business partnership. It is necessary to create partnership networks for successful development of innovational processes. One of the most important elements of innovation networks are channels and forms of transferring new technologies and know-hows from one organization to another within the network. Thereby in this part of our Paper we just tried to give a hint that possible cooperation among Finnish Intelligent cluster and Russian enterprises, universities, research institutes and governmental bodies might be very productive. The knowledge-intensive mechanical engineering is localized mainly in St.

Petersburg where there is a full-blown base for development of new types of the equipment at the level of modern standards. We gave good examples of successful machine building companies, presented wide range of suppliers, paid attention on existing clusters, talked about willingness of Russian government to support cluster initiative.

The concept of social and economic development of St. Petersburg till 2025 assumes transfer of the economy to an innovative way where science and education will be the main priorities. So we believe that Russian research institutes and universities might make a significant contribution into development of new technologies and production approaches for the potential Russian-Finnish cluster.

6. Factor analysis: opportunities and constraints for Intelligent Machine trans-border cluster to grow

If we think about the trade between Finland and Russia, we can say Finns and Russians have always made trade together. Russia has become the biggest trading partner of Finland in this decade. Finnish exports to Russia have grown faster than its imports from Russia. Russia's imports have grown rapidly because of the oil revenues, which support consumption and investments possibilities in the country. The demand is mainly in investment goods and consumer durables, where Russian production is not large and many consumers appreciate foreign products more than domestic ones. Machinery, equipment and vehicles, as well as chemical products and foodstuffs play an important role in Finnish exports to Russia. This kind of development is partly due to re-exports, but also reflects historical and geographical factors. (Sitra, Raportti 66, pp. 25-27.)

As it shown below the export of machinery and mechanical industry goods from Finland has played important role in Finnish export industry in the 2000 century. Between years 2011 and 2012 the export of machinery and mechanical industry goods has grown +7% while export of metals industry goods has declined -4% and export of electronics and electro technical industry goods has grown only +4%.

Teknologioteollisuuden tavaravienti Suomesta

Export of Technology Industry Goods from Finland

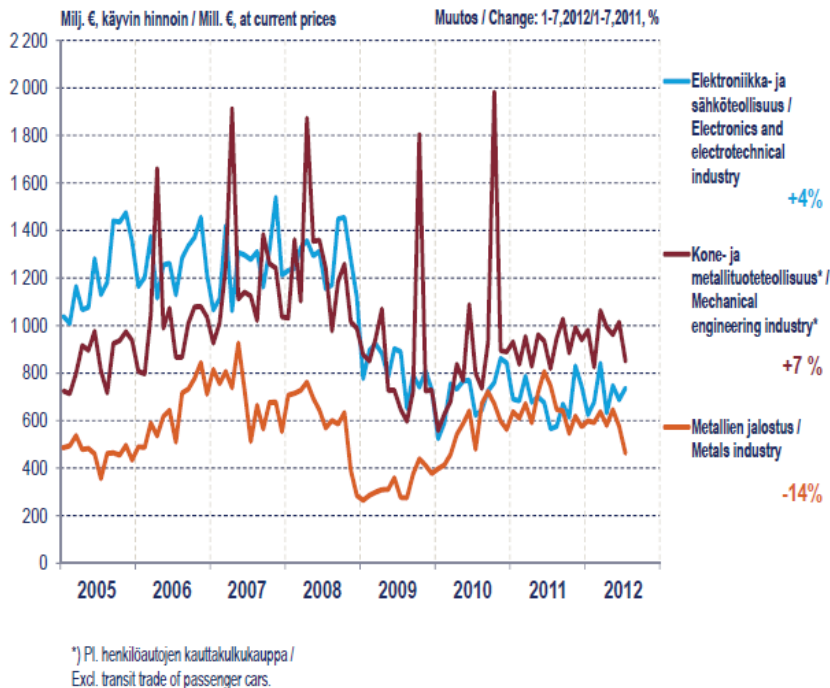


Figure 4. Export of technology goods from Finland. Source: Teknologioteollisuus ry website

When we think about existing or possible linkages and roles of Russian and Finnish enterprises in machinery cluster, we can name the players in the cluster field in Finland. As mentioned also earlier nearly all of the biggest companies in mechanical industry in Finland are involved in the clusters. The cluster of intelligent machines have created an internationalization plan, where it is stated that the purpose of the internationalization is to create a cooperation network for developing the intelligent machines with other European actors in the field of intelligent machines. The target countries are Russia and Germany. Goals of the internationalization plans are, e.g.

- to increase match making of companies and research institutions of intelligent machines to the international machinery industry
- to promote the intelligent machine sector to renew, to develop the business models, to use the new technologies and to create new products
- to support SMEs who export and creating new companies and develop the spin-off and venture capital actions
- to make the Centers of expertise to be the international players and remarkably increase the project and Program activities
- to increase the attractiveness of the the Center of Expertise and investing actions of foreign companies to the region

(Teknologiakeskus Hermia Oy, Toimintasuunnitelma kansainvälistymiseen ja kansainvälisyyden edistämiseen, p. 15.)

When we read the goals given in the internationalization plan, it is easy to analyze that there are many plans existing in written forms, seminars and training have been organized in Finland about intelligent machine cluster and cooperation with Russia, but still not many concrete actions have been made.

From the side of Russia we can observe a lot of challenges and constraints related to the cluster development in Intelligent Machines industry segment.

Firstly, Russian companies do not possess the necessary technical resources and machinery capabilities what was proved during years by high level of import in the industry. The process industry including machinery is a clean importing industry in Russia according to the comparison of export/import proportions throughout last years since import prevail over export by more than \$100'000,00 mln. in 2010 and 2011. As a result we see a huge need of technological improvements and upgrades what is ultimately leads to high volumes of necessary investments. The degree of machine depreciation in 2010 was 53,4% and the share of totally depreciated equipment was 21% at the same time (www.gks.ru- Russian Federal State Statistics Service).

And the second constraint is thus an absence of domestic investments and/or the absence of a readiness to invest in technological process among both leading companies and government. From business side it is easy to see through a high volume of import of machines and related equipment, from the government side – through the controversial economical, tax and social policy which results in fluctuations in tax rates for all business levels, inability to develop regions and small cities with one city landmark company (as it was in Pikalevo, etc.) and in the ineffectiveness of government business-supporting programs. Government made only 2,4% of total investments in process industry in 2010 and the share of investments in machines and equipment in the industry was about 28,4% in 2010 that is relatively low comparing with high depreciation level because new installed machines takes only 25% of all depreciated equipment (www.gks.ru- Russian Federal State Statistics Service).

At the same time, despite the large labor market and prospect high revenues, Russia still looks like a very risky place to invest in for foreigners and international companies. Russian country risk is still at the relatively high level due to the bureaucracy, red tape, political instability and pressure, regional problems with various kinds of factors (infrastructure, criminal, climate, etc.). For years, from 2003 to 2008 foreign investments in the process industry was in 6 times smaller than domestic investment flows (Russian statistic factbook, 2009). For year 2011 the investment flow significantly increased due to the both growth of revenue attraction of Russia and start of recovery process after the world crisis. Nevertheless the major top-3 foreign investors in process industry was Cyprus, Switzerland and Germany and we can justify that investment from Cyprus and Switzerland may become a comeback of repatriated (or covered from tax) Russian capital (tassgraphics.ru – Info graphics portal of ITAR-TASS news agency).

In addition to that we are right in talking about lack of the qualified workforce, brain drain process and decrease in scientific activity both in researches and invents linked to the machinery industry and in all science fields in general. It comes from the several following reasons.

- Salary rates in the industry are at the unattractive level (20'102,4 rubles per month in 2010) comparing to the other industries, e.g. oil and gas (41'563,4 rubles per month in 2010); financial (50'120,00 rubles per month in 2010), communication and transport (25'589,9 rubles per month in 2010) (www.gks.ru - Russian Federal State Statistics Service). At the same time the salary indexation shows a gap in following to the inflation growth. The real salary rate in 2009 fall by 4-5% and in 2010 – by 0,6% (www.rg.ru - Official website of the Russian Newspaper). That is why young generation is not interesting in working in machinery industry for some exclusion of IT-programing and software creation which is necessary for modern complicated machines to work. And also it is a purpose for qualified personnel to find a job abroad or to change a job to another one.

- Government and corporate system of investments in and supporting of scientific researches in the machinery industry is not enough to provide the industry with appropriate innovations and commercial outcome. A lot of scientists have already moved to or think about moving to another country where they can find advantageous conditions for researches and scientific investigations as well as financial and social remuneration they actually deserve. In Russia it is financially risky to be a scientist due to the absence of financial aid, technological conditions and even due to the absence of social recognition.
- As a result of the continuing lag in technological development now a lot of modern machines are invented, designed and produced abroad. Even the fact that migrant or outsourced Russian specialists are often involved in the creation of such new machines or process the rest part of Russian personnel do need to learn how to work with new machines, robots and tools or even do need to change its mind to understand how actually works. This creates a lot of problems with implementing import equipment and intensifies the lag process.

And finally, the process of cluster creation and core principles of its work stay unclear for majority of Russian companies and regional administrations. Even the creation of Skolkovo center didn't provide Government or business with expected effects yet. Russia need, both from educational level in schools and universities to top-management level in leading companies and from Federal Government to regional administration, becomes aware of core principles clusters works. The interconnections with existing specialized firms and supporting industries do need to be supported and developed on the basis of educational institutes by the financial, insuring, investing, etc. ones in the advantageous tax, legal, institutional, information and social conditions. Russia needs to benchmark the process of the cluster creation from another cluster-based country such as USA or leading EU countries. Therefore the lack of experience, unclear vision and misunderstanding of the cluster work is a last and the least obstacle for Russian companies and government.

On the other hand, in the case of Russian-Finnish collaboration in the field of innovation and technology, our cluster has a good opportunity to become a leader of the industry and the main supplier for Russian companies. The reasons are competitive advantages over companies in Russia, government support of import substitution, great domestic market and significant internal demand. So, most businesses in Russia operate from the Soviet Union and depreciation degree of fixed assets in manufacturing is around 46% during the last 6 years (www.gks.ru - Russian Federal State Statistics Service). That means the lack of real competitors and the need for urgent replacement of machinery and equipment, for which our cluster can be the principal supplier.

Besides, government of Saint-Petersburg takes some actions to stimulate machinery and developing of cluster, for example, complex program "Science. Industry. Innovation", one of the point of which is support for cluster creation, raise of demand, developing of infrastructure, education, etc. (www.cedipt.spb.ru- Official website of the Committee of Economic Development, Industrial Policy and Trade in Saint-Petersburg). Also Russia has great potential in human resources because of great amount of universities and students (St. Petersburg - leading Russian scientific and educational center, 10 % of higher education institutions in Russia). Currently, some institutions work within different clusters (or have such potential) now (e.g. collaboration FINEC and Polytech with IKTMM).

In addition, Russia is one of WTO member now and it means decrease of taxes, new market and trade volume increase. Besides, Russia has the access to the Asia market and it can be our great opportunity.

7. Intelligent Machines Cluster Diamond Model

7.1 Factor conditions

In Finland the innovative way of cluster planning and good experience of cluster work is an advantage in Intelligent machines cluster development between Finland and Russia. The existing clusters create better conditions for Finnish competitive and attractive innovation environment internationally. *Research and Development institutions* are already deeply involved to the machinery cluster in Lappeenranta region and in whole Finland and this will also create possibilities to close cooperation with R&D institutions in St. Petersburg. Skilled labor for intelligent machines field exists in Finland.

In St. Petersburg in the area of *human resources*, skill shortages are emerging throughout the industry despite the high level of formal education of the Russian labor force. Universities can provide the cluster with good specialists for medium and high level positions. But there are not enough colleges in the region to train operating personnel. The possible way out is to attract employees from other Russian regions. We believe that in this situation cluster members will ready to offer employees long-term employment, insurance, professional education at the workplaces, workshops and trainings abroad (mainly on the basis of Finnish universities and Research centers).

The most part of Russian ferrous metals is produced in the European part of the country (including St. Petersburg) what directly supports metal-consuming and heavy machinery. Thereby it's going without saying that there are suppliers of different kinds of metal by itself and articles thereof within the cluster. It means that the Cluster has an *access to the primary resources* and machinery companies aren't dependent on the external suppliers.

And the last but not the least important factor here is a *physical infrastructure*. The transport network of both Northwest region and Finland is well developed. It means that freight traffic between Russian and Finnish cluster units can be carried out freely. There are several ways of transport connection between regions: railroads, highways, aviation and shipping.

7.2 Demand conditions

Domestic demand in Russia and Finland

First of all the Cluster will meet demand of supporting and related industries since it's a part of domestic demand of Finland and Russia. The rest part of the domestic demand will be provided by companies, government, individual entrepreneurs, and individuals – consumers of cluster production output (in respect of future specialization of the cluster): mobile work machines, machines and devices for agriculture and forest industry, machines and devices for the food industry, special vehicles, factory automation, lifting, moving, and logistics, machines and devices for process-industry use and coating and corrosion prevention.

According to the chosen field of cluster specialization the consumer market will include a lot of medium and big companies in the respective field: process industry, mobile operators, FMCG, machine plants, etc. In both countries we can observe tendencies as the growth in GDP, presence successful machine-building companies, demand for modern equipment and machines, tendency to increase its production volume in machinery industry, etc. As for the small companies it is still unclear whether they will be able to purchase cluster products at the desirable prices or they will be just case-by-case customers since they may probably have no necessary financial facilities (the last situation more likely to arise in Russia).

Export opportunities

Despite the EU economic instability, international markets, which are presented not just by developing countries of Asia, South America and Africa region, but also by American and European international enterprises and medium companies, still show stable demand and interest in products of the machinery industry. Intelligent machines became the most demanded products of the industry since they provide owners with automatic labor facilities, high speed and high productivity. At the same time improvements in traditional machinery segments, such as automobile or agricultural machines production, support the development of other industries including intelligent machines and equipment, computer systems and special electronic software. In addition the effective cluster should be able to provide its members with advantageous conditions in innovations, business development, effectiveness in business processes, speed in production, flexibility in reaction to the mild demand change, ability to create new consumer market, etc. This all is supposed to provide cluster members with beneficial financial conditions and can lead to the prices reduction (here prices will be lower than at the non-cluster units). Also product range within the Cluster is planned to be wider, some economic indicators will be higher than industry average etc. Thus it will be an additional driving factor for quality growth and for demand increase from other countries – expansion of international contacts and export opportunities.

In other words export opportunities for cluster's products will exist despite the cluster specification since all industries, even agricultural or financial, work with, on, by or toward the machines. As supporting tendencies we can consider following:

- economic growth in developing regions where a stable demand for the machinery products has already been shown or just will be shown in the nearest future;
- increase in number of created clusters in other countries as a beneficial way for companies to cooperate and develop;
- labor intensification and production specialization processes in countries and regions,
- dramatic growth in number of links and interconnections between countries, companies and people, provided by developing of information and cultural exchange flows.

7.3 Context for firm strategy and rivalry

As it has already been mentioned in the cluster analysis there are plenty of national clusters in Finland and the government is involved in the cluster activities. The Intelligent machines cluster in Finland is supported at the state level and has clear action plans and objectives. Big companies have more chances and possibilities to succeed than the SME's because of higher number of human and time resources, stronger investment strategies and experience of doing business abroad.

As for Russia (St. Petersburg in particular), there is Innovation and Technology Mechanical Engineering and Metal Cluster whose members have not yet received much support from the government, but this cluster still has a number of advantages based on creation of common technological platform engineering and metalworking based on the best international technology and effective system of interaction between cluster members.

7.4 Related and supporting industries

There is a high presence of local suppliers and supporting industries within the Cluster. First of all it is a *metallurgy* - one of the main supporting industries of machinery and mechanical engineering. Metal production from raw materials, alloys production, welding, metal coating and other types of metal processing directly refer to the metallurgy. *Metal working* is the supporting industry which includes metal articles production, metal construction, maintenance and service of machines and equipment. *Machine-tool construction, instrument making and tool industry* are should be highlighted as well. These industries supply metal processing and equipment production with all the necessary tools. *Research-and-production complexes, Research institutes and Research centers* constantly interact with all industries of mechanical engineering. They are working on innovation ideas which can help to modernize all stages of machinery production.

All above mentioned industries are referred to the first (initial) level of a machine-building complex. These industries, in turn, are the suppliers for the end products manufacturing (complex equipment, machines and other hi-tech output). End products are being realized at the related industries markets: power industry, chemical and petrochemical industry, mining, forest and woodworking industries, food industry etc.

7.5 Government

The Government of St. Petersburg has been actively involved in projects to create clusters and tries to encourage the development of clusters in the city. In 2011 The Saint-Petersburg Union of Entrepreneurship realized the idea of exhibition Saint-Petersburg industries through cluster approach (www.spp.spb.ru - Union of Industrialists and Entrepreneurs of St. Petersburg). The result is five clusters in Saint-Petersburg in different fields (www.spp.spb.ru - Union of Industrialists and Entrepreneurs of St. Petersburg).

Main points of government support:

1. Complex program “Science. Industry. Innovation” in Saint-Petersburg at the 2012-2015 (one of the directions - facilitate the development of clusters);
2. Educational program of export science “The University of Export”
3. Federal legislation provides tax privileges and customs preferences to residents of special economic zones
4. Subsidies from government to industries.

Conclusion

Thus, results of the study led to the following conclusions about opportunities for trans-border cluster development.

Both countries, Russia and Finland, are worthy partners for cooperation. PESTLE and SWOT analyzes gave us the detailed information about strengths and weaknesses of each country.

Analysis of Russian Federation from this perspective allows concluding that the country has a fast growing and rapidly developing economy. Also Russia has plenty of natural resources, advantageous geographical location what creates good export opportunities, educated workforce, good R&D base etc. The large size of the domestic market can be considered as one of the biggest advantages of Russian Federation. Thus the combination of a large population and a rather high level of per capita income makes Russia's consumer market one of the largest in the world. A large market size has also other advantages, in particular higher attractiveness to FDI, which brings many spillover effects such as transfer of management and technological know-how. As for the Northwest region and its machinery industry show one of the best results over the country and therefore it lets Saint-Petersburg city and Leningrad region to concentrate vital human and capital resources and capabilities, including in foreign trade and machinery development. As the necessary preconditions for Russian-Finnish cooperation in Machinery and Mechanical engineering area we consider support of Russian government and special institutions focused on issues of developing Russian economy competitiveness and the presence of good network of related and supporting industries.

Finnish national competitiveness creates many possibilities for joint cluster work between South-East Finland and St. Petersburg region. The physical, administrative and scientific as well as technological infrastructures are on a high level in Finland when thinking about the factor conditions of the country. Lack of foreign direct investments, high taxes, strict labor regulations and difficulties accessing to financing can be considered as negative factors for business environment in Finland. Machinery and mechanical engineering industry is the largest technology industry in Finland. We found the demand in domestic and/or international markets can be considered as a positive or negative influence to the national competitiveness. Finland is an innovative country, where equality between workers exists, but because of the high taxes and labor costs the production is easily running out abroad. There exists a good national cooperation between the companies from the same field in Finland and national clusters have already been formed.

Our task was to consider possible and existing linkages between Russian and Finnish enterprises in the field of machinery and mechanical engineering. As this field is very huge by itself we have decided to choose one sub-industry and offer ways for Russian-Finnish collaboration. The choice was made in favor of Intelligent Machines. There is an existing cluster of the same name in Finland. Concerning Russian Federation there is no such cluster

for cooperation that's why Russian side decided to make a list of companies which could be possible members of trans-border Intelligent Machines Cluster¹³.

The developed engineering infrastructure and high scientific and technical capacity of St. Petersburg is used by the power mechanical engineering enterprises. But analyzing companies referred to the Machinery industry we defined that there are much more companies engaged with production of spare parts, machine tools, equipment and metal articles. That's why authors believe that Russian enterprises might be strong from the viewpoint of materials delivery and human resources, but finished articles should be assembled on Finnish production facilities as its technological potential is higher than Russian.

Planning a joint border cluster in the field of Machinery was a challenging task. Finnish side hasn't undertake any measures yet to establish any business contacts with Russian Federation in the field of Intelligent Machines, though Russia is one of its target partners. Russian side, in turn, needs a strong support from the Government in order to start such cooperation. Thus forthcoming constraints for the possible Cluster to grow are unavoidable. Main of them are low FDI, strict regulation and labor costs in Finland, ineffective legislation, weak modernization, country risk, brain drain process in Russia.

But, on the other hand, in the case of Russian-Finnish collaboration in the field of innovation and technology, our cluster has a good opportunity from the Russian side to become a leader of the industry and the main supplier for Russian companies. Besides, there is a significant support of Saint-Petersburg government, which takes some actions to stimulate machinery and developing of cluster. Also Russia has great potential in human resources because of great amount of universities and scientific institutions.

In addition, Russia is one of WTO member now and it means decrease of taxes, new market and trade volume increase. Besides, Russia has the access to the Asia market and it can be our great opportunity. From the Finnish side, developed infrastructure, SME internationalization, high level of modernization and existing Machinery cluster are great opportunities too.

Summing up, Russian-Finnish trans-border cluster has a great opportunities to become a leader of industry in both countries and give opportunities for development to companies, that it will contain. It will strengthen trans-border collaboration in all supporting fields, like education, logistic, government relations and stimulate economic development not only chosen region, but both countries.

¹³ See Appendix 7. Key Russian Actors of potential Intelligent Machines Cluster

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Appendix 1. PESTLE and SWOT analyses for Finland

Political factors	Notes	SWOT: Opportunity/ Threat	Impact on machinery sector in RUSSIA (writers' notes): High/Medium/Low
Trading policies	<ol style="list-style-type: none"> 1. Membership in the EU has changed the operating environment of Finland's trade policy. 2. Finland's general trade policy line has always emphasized the importance of dismantling barriers to trade and investment and participation in an open world economy. 3. Trading, investment and financial policies are run by the Finnish Government 4. Trade in goods and services, investment, and issues related to international economic activities and domestic regulation (Formin) 	Opportunity/ Threat	<p>Medium: The continued existence, expansion and reinforcement of the multilateral rules-based trade policy system, embodied in the WTO, is of utmost importance for Finland.</p> <p>High: Russia is a full member of WTO</p>
Internal political issues	<ol style="list-style-type: none"> 1. Unemployment in traditional industrial sectors. 2. in protecting Finnish labour, livelihoods and welfare 3. Increase volume of production and employment 4. Finnish companies have continued their expansion abroad 5. improves the effectiveness of the domestic market 6. increases price competition and expands the range of items available on the market. <p>(Formin)</p>	Opportunity	<p>Medium: New innovations in industry .</p> <p>High: Proves that the changes in world economy have been met successfully at the company level.</p>

International pressure groups	<p>1. a Permanent Representation to the European Union (EU) in Brussels</p> <p>2.a <u>Permanent Representation to the Council of Europe (COE) in Strasbourg</u></p> <p>3.a <u>Permanent Mission to the United Nations (UN) in New York and Geneva</u></p> <p>4.a <u>Permanent Mission to the World Trade Organisation (WTO)</u></p> <p>5. a <u>Permanent Mission to the Organisation for Security and Co-operation in Europe (OSCE) in Vienna</u></p> <p>6. a <u>Permanent Mission to the Organisation for Economic Co-operation and Development (OECD) in Paris (Formin)</u></p>	Opportunity/ Threat	High: to bring about economic growth, employment and rising living standards in its member countries and to contribute to the development of the world economy and trade on the basis of multilateralism.
Wars and conflicts Terrorism	<p>1. Finland is a low risk country of military intervention and terrorism.</p> <p>2. Finland participates actively in the implementation and development of CFSP. (The Common Security and Defence Policy) (Formin)</p>	Opportunity	High: Safeness a property of machinery cluster.
Political trends	<p>1. Democracy is characterised by a strong penchant towards consensus and pragmatic policies implemented by coalition governments (Formin)</p> <p>2. Opposition parties have no significant impact on decisions. (MTV3)</p>	Opportunity Threat	<p>Medium: Decisions are made on a long-term approach</p> <p>Low: Different ideas have difficulties to come through.</p>
	1. Finland is a	Opportunity	Medium: the stability of

Current government structures	parliamentary democracy with a multiparty political system and a president as the head of state. 2. There are 12 ministries in Finland (Formin)		the current Government is balanced
Economic factors	Notes	SWOT: Opportunity/ Threat	Impact on machinery sector in RUSSIA (writers' notes): High/Medium/Low
Overseas economy trends	1. Finland participates in international crisis management in the EU's, the UN's and the Nato's peacekeeping operations (Formin)	Opportunity	Medium: Overseas third world economies have rather moderate direct effect on machinery sector in Finland.
Home economy situation and trends	1. National Program for the Europe 2020 Strategy. 2. Consumption expenditure grew from the previous year, whereas investment expenditure diminished (Ministry of Finance)	Opportunity/ Threat	Medium: on key areas to accelerate sustainable growth in Europe and to boost competitiveness
Funding	1. The total funding available to Statistics Finland was EUR 61.2 million, or EUR 0.2 million less than in the previous year. (Ministry of Finance)	Opportunity/ Threat	Medium: Co-operation projects and external funding constituted other important sources of financing.
Direct labor costs	1. Seasonally adjusted labour costs in the private sector rose by 4.8 per cent in April-June 2012 when compared the respective period of the year before. Over the same time period, the index of wage and salary earnings for the private sector went up by 3.7 per cent. (Statistics Finland)	Opportunity	Medium: Machinery sectors direct labor costs form a major part of total costs
General taxation	1. Corporation tax is an income tax collected from limited companies and other	Threat	Medium: High taxation rate. Such as in Russia taxation rate in lower.

	corporations, the rate of which is 26% of the taxable income of a corporation. (Statistics Finlands)		
Taxation specific to machinery	1. Corporation tax (24.5%) is uniform for all types of corporate income, including sales profits, interest income, dividends, royalties and rental income; value-added tax (VAT) is charged at 23% on most goods and services. (Statistics Finlands)	Threat	Medium: High taxation rate. Such as in Russia taxation rate in lower
Specific industry factors	1. agriculture: 2.8% 2. industry: 29.2% 3. services: 68% (2011 estimate)	Opportunity	High: High-efficient technology can impact to old-fashion facilities in Russian industry.
Job growth/ unemployment	1. Fewer open job vacancies in the third quarter than one year earlier 2. The number of unemployed persons in October 2012 was 183,000, which is nearly the same as one year ago. The unemployment rate was 6.9 per cent, having been 7.0 per cent in October of the year before. (Statistics Finlands)	Opportunity/ Threat	Medium: Increase opening job vacancies in International Joint Ventures Fin-Rus
Inflation	3.3% (2011) (Statistics Finlands)	Opportunity/ Threat	Medium: As Finland's economy was recovering from the recession, consumers started to believe that their own financial situation would improve as well
Export / Import	1. Finland, foreign trade represents over 50 per cent of the GDP 2. Traditionally import has applied to energy and raw materials in particular (Formin)	Opportunity	Medium: Export promotion and internationalisation (EPI) Medium: Import policy and facilitation of imports from developing countries
Development of productivity	1. Long-term growth trend (HP) indicates	Opportunity/ Threat	Medium: projects are responsible for product

	<p>that the pace of growth in labour productivity has slowed down strongly in the whole economy since the mid-1990s, from 3.5 per cent to -0.2 per cent in 2011</p> <p>2. Strategy's vision is to have in Finland the best working life of Europe in 2020 (Statistics Finlands)</p>		<p>development to promote employment, skills, corporate development, innovation, etc</p>
Production	<p>1. The structure of production industries has changed, there are hardly any economic sectors where imported inputs would not play a significant role.</p> <p>2. Industries became technology-intensive and production was strongly characterized by specialization (Statistics Finlands)</p>	Opportunity/ Threat	<p>Medium: Any changes in industry influence to the Global market. Companies can grow and develop if they have a skilled workforce. And jobseekers need to find employment as quickly as possible.</p>
Social factors	Notes	SWOT: Opportunity/ Threat	Impact on machinery sector in RUSSIA (writers' notes): High/Medium/Low
Laws affecting social factors	<p>1. The Government's goal is to ensure stable development of appropriations, leading to the target level 0.7% of GDI by 2015 (Formin)</p>	Opportunity	High: Finland has a human-rights-based approach to development
Country brand	<p>1. Promotion of the rights and the status of women and girls and social equality.</p> <p>2. Promotion of the rights of groups that are easily excluded and discriminated, particularly children and etc</p> <p>3. Combating HIV/AIDS; HIV/AIDS as a health problem and as a social problem. (Formin)</p>	Opportunity	The aim is to profile Finland as the best-known country globally in the field of cleantech and citizens' rights
Unemployment rate	7.7% (2012) and 7.8% (2011)	Opportunity/ Threat	Low: the number of people receiving

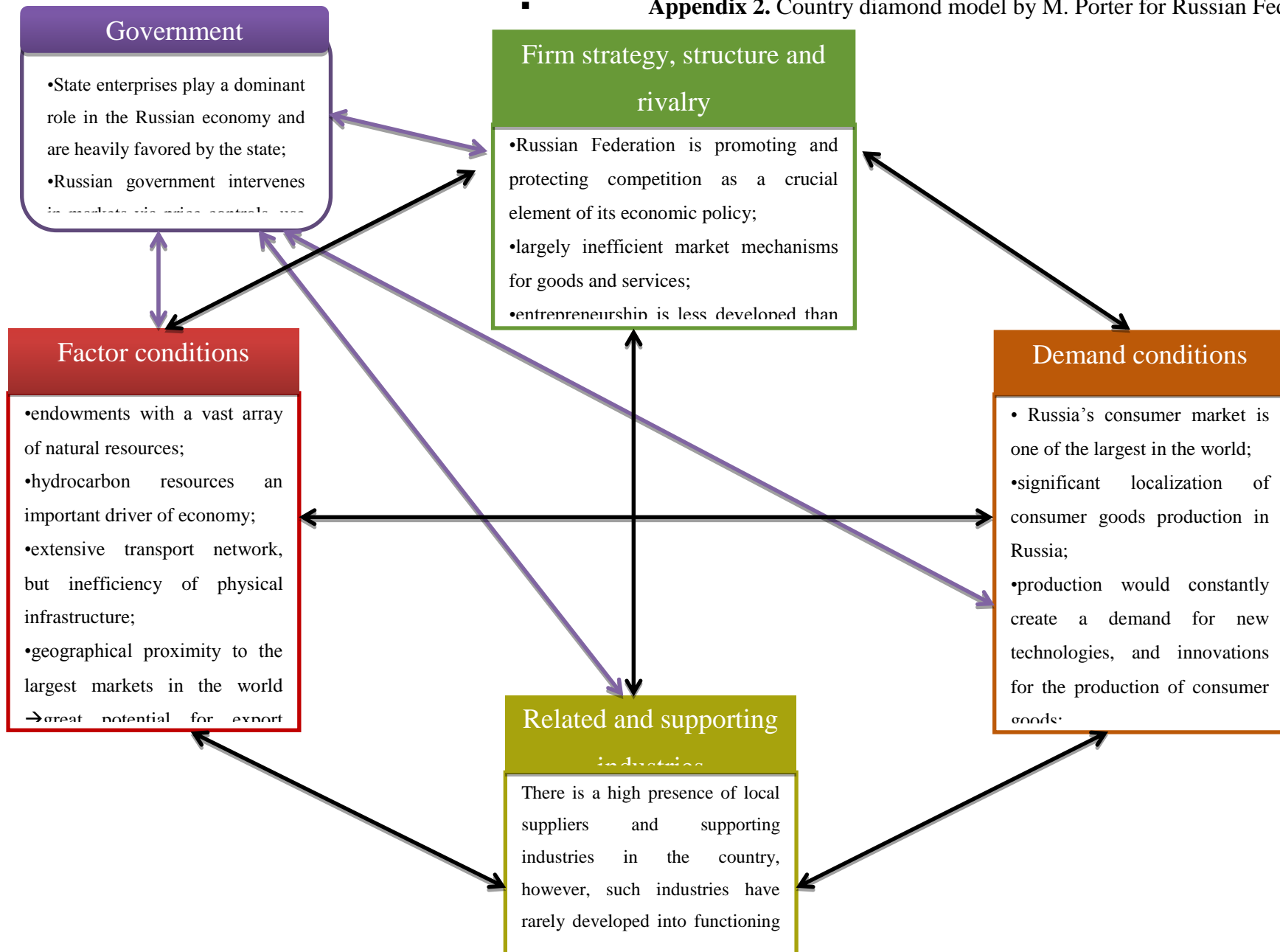
	(Statistics Finlands)		unemployment pension and the number of unemployed jobseekers doesn't change
Buying trends	1. Finland builds on its strengths in the educational sector, health promotion, communications and environmental technology, and good governance (Statistics Finlands)	Opportunity	High: Growing demand provides a key stimulus to the development of new products, services and solutions
Demographics	The population in Finland is ageing faster than in any other EU country	Threat	Low: Currently rather low, but lack of skilled working force might be a problem of rather near future
Ethnic/religious factors	<ul style="list-style-type: none"> • The Sámi - indigenous people in Northern Lapland • <u>The Russians in Finland</u> • <u>The Roma in Finland</u> • <u>Jewry in Finland</u> • <u>The Tatars in Finland</u> (Formin)	Opportunity	Medium: Ethnic and religious factors makes no difference
Education	1. Finland has gained widespread attention for the best education system in the world. (Formin)	Opportunity	High: The level of education is essential for engineering. The present educational system allows you to prepare these professionals
Attitudes to work	1. Development of the quality of work promotes meaningfulness and motivation at work as well as job involvement and work productivity . 2. Government Strategy's vision is to have in Finland the best working life of Europe in 2020. (Statistics Finlands)	Opportunity	High: successful integration requires positive attitudes and functioning interaction between various population groups.
Equality	1. Encompass equality regardless of age, origin, language, religious belief or	Opportunity	Medium: Equal pay is a basic condition for a fair and productive working life

	health. 2. Equality between Women and Men		
Technological factors	Notes	SWOT: Opportunity/ Threat	Impact on machinery sector in Russia (writers' notes): High/Medium/Low
Competing technology development	The increase in the industry's cost level will be higher in Finland than in other competing countries in Europe. (Statistics Finlands)	Opportunity/ Threat	Medium: Russia can help reduce costs and labor costs.
Maturity of technology	Top technology society	Opportunity	High: To develop a significant number of new technologies and solutions which improve the efficiency, safety and controllability of work processes implemented with mobile work machines or machine systems
Manufacturing maturity and capacity	1. According to Statistics Finland, output of total industries adjusted for working days was 1.7 per cent lower 2. economic uncertainty and overcapacity in the industry have recently caused the prices of steel products and non-ferrous metals to fall. (Statistics Finlands)	Threat	Low: Weak demand from Europe and the USA has added to the challenges of China's strong export sector. Several industry sectors suffer from overcapacity.
Consumer buying technology	1. The consumer confidence indicator stood at 1.0 in November, 2012 2. The most important factors influencing consumer behavior are high quality of Finnish products and affordable prices. (Statistics Finlands)	Opportunity/ Threat	High: Russian customers are generally satisfied with the existing products and level of service in Finland.
Innovation potential	In manufacturing, innovation activity related to products or	Opportunity	High: The total share of enterprises having engaged in innovation

	<p>processes was most widespread in the manufacture of computer, electronic and optical products - automated functions in work machines</p> <ul style="list-style-type: none"> -measuring techniques -multi-machine cooperation -remote operation -new design methods -the energy-efficiency of work machines. <p>(Statistics Finlands)</p>		activity was 57 per cent
Manufacturing	<p>1. Cruise liners, engines for ships and power plants, pulp and paper machines, rock and mineral processing equipment, lifts, hoists and cranes, forestry and agricultural machinery and small metal products.</p> <p>(Formin)</p>	Opportunity	High: The manufacturing has the opportunity for its development in the neighboring weakly developed market
Employers in the sector	125 000 people in Finland	Opportunity/ Threat	Medium: Percentage of employed in industry is less than other competitive countries which have a very developed economy
Legal factors	Notes	SWOT: Opportunity/ Threat	Impact on machinery sector in RUSSIA (writers' notes): High/Medium/Low
Current legislation	<p>1.the Council of State, 2.The Constitution of Finland, Civil law, regulations and etc 3. in Finland.</p> <p>International legal assistance is also regulated through EU regulations. (Om)</p>	Opportunity	High: The legal system has a very strong influence on society and the relationship between organizations and international associations
Future legislation	1. Development of legislative drafting is a common goal for trade and industry, labour market and consumer associations and non-governmental organisations as well as the public	Opportunity/ Threat	Medium: Development of legislative drafting in Finland aims is to improve the clarity of legislation and promote the welfare of citizens and the competitiveness of businesses. Environmental

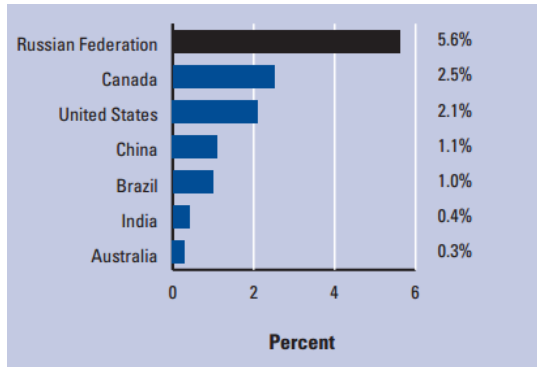
	administration and the judiciary. (Om)		regulations will become stricter: pressure for planning and execution of projects and resource.
Consumer protection	1. Strong status legally regulation bind over the Ministry of Justice is also responsible for the national preparation of EU consumer protection and company law files. (Om)	Opportunity/ Threat	Medium: Production target will be achieved only if satisfy the consumer.
Customer values	1. Green thinking	Opportunity	High: Market value can be reached through green thinking

▪ **Appendix 2.** Country diamond model by M. Porter for Russian Federation

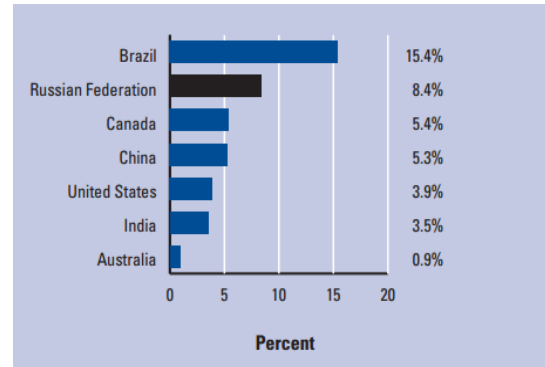


Appendix 3. Resource endowments in the Russian Federation

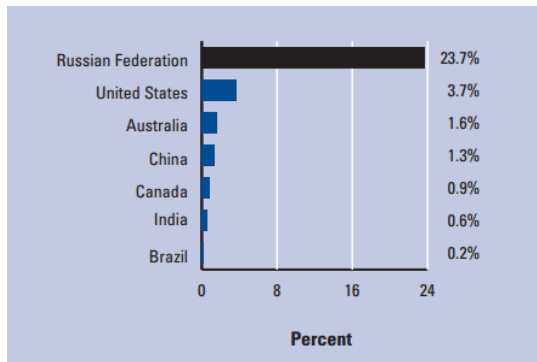
a: Oil, proven reserves, share of world total in 2009 (%)



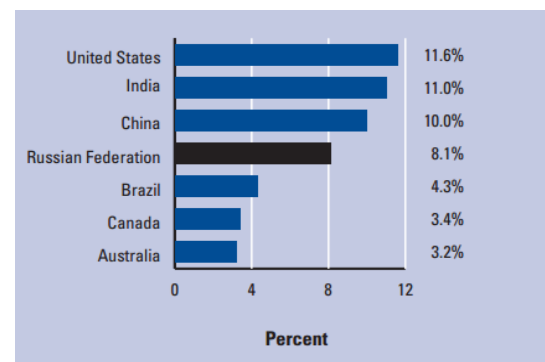
d: Water reserves, share of world total in 2005 (%)



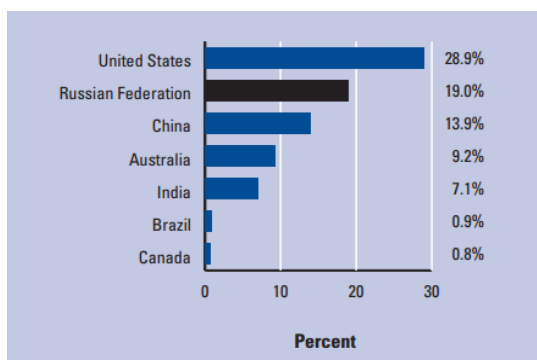
b: Gas, proven reserves, share of world total in 2009 (%)



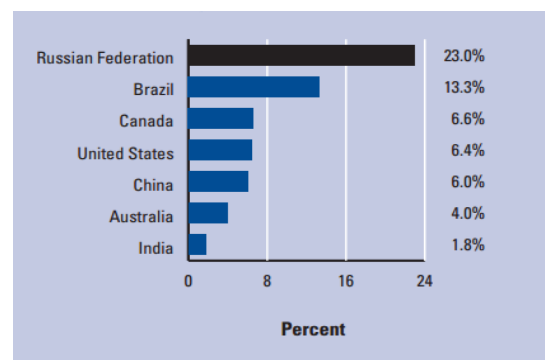
e: Arable land, share of world total in 2005 (%)



c: Gas, proven reserves, share of world total in 2009 (%)



f: Forest cover, share of world total in 2005 (%)



Sources: British Petroleum, 2010; PAI, 2004; FAO, 2011

Appendix 4. Indicators of technological development in Russia

Research and development expenditure, (% of GDP)

Country Name	2002	2003	2004	2005	2006	2007	2008	2009
Israel	4,59	4,32	4,26	4,41	4,43	4,80	4,66	4,27
Sweden	n/a	3,80	3,58	3,56	3,68	3,40	3,70	3,62
Finland	3,37	3,44	3,45	3,48	3,48	3,47	3,72	3,96
Japan	3,17	3,20	3,17	3,32	3,40	3,44	3,45	n/a
United States	2,62	2,61	2,54	2,57	2,61	2,67	2,79	n/a
Germany	2,49	2,52	2,49	2,49	2,53	2,53	2,68	2,82
France	2,24	2,18	2,16	2,11	2,11	2,08	2,12	2,23
World	2,11	2,09	2,04	2,04	2,04	2,01	2,14	n/a
Canada	2,04	2,04	2,07	2,05	1,97	1,91	1,84	1,95
United Kingdom	1,79	1,75	1,68	1,73	1,75	1,78	1,77	1,87
China	1,07	1,13	1,23	1,32	1,39	1,40	1,47	n/a
Italy	1,13	1,11	1,10	1,09	1,13	1,18	1,23	1,27
Russian Federation	1,25	1,29	1,15	1,07	1,07	1,12	1,04	1,25
Brazil	0,98	0,96	0,90	0,97	1,00	1,07	1,08	n/a
South Africa	n/a	0,79	0,85	0,90	0,93	0,92	0,93	n/a
India	0,74	0,73	0,74	0,78	0,77	0,76	n/a	n/a

Source: www.data.worldbank.org

*Table contains data for the 3 countries with the highest rate, the G7 and the BRICS

Forecast Gross Domestic Expenditures on R&D (GERD), Bill.\$US

Rank	Country	2010 GDP PPP, Bill. U.S. \$	2010 R&D, % GDP	2010 GERD PPP, Bill. U.S. \$	2011 GDP PPP, Bill. U.S. \$	2011 R&D, % GDP	2011 GERD PPP, Bill. U.S. \$	2012 GDP PPP, Bill. U.S. \$	2012 R&D, % GDP	2012 GERD PPP, Bill. U.S. \$
1	USA	14,66	2.83%	415,1	15,20	2.81%	427,20	15,305	2.85%	436,0
2	China	10,09	1.48%	149,3	11,28	1.55%	174,90	12,434	1.60%	198,9
3	Japan	4,31	3.44%	148,3	4,38	3.47%	152,10	4,53	3.48%	157,6
...										
11	Russia	2,223	1.03%	22,9	2,37	1.05%	24,90	2,491	1.08%	26,9
...										
24	Finland	0,19	3.87%	7,2	0,20	3.83%	7,50	0,20	3.80%	7,7

Source: 2012 Global R & D Funding Forecast. Access: <http://battelle.org/docs/>

Researchers in R&D, (per million people)

Rank	Country Name	2002	2003	2004	2005	2006	2007	2008
1	Finland	7 433	8 008	7 846	7 548	7 674	7 372	7 689
2	Iceland	n/a	6 617	n/a	7 262	7 972	7 223	7 428
3	Denmark	4 757	4 621	4 845	5 200	5 300	5 517	6 494
...								
20	Russia	3 381	3 365	3 310	3 230	3 236	3 274	3 152

Technicians in R&D, (per million people)

Rank	Country Name	2002	2003	2004	2005	2006	2007	2008
1	Luxembourg	n/a	3 775	n/a	3 407	2 759	2 777	3 026
2	Switzerland	n/a	n/a	2 327	n/a	n/a	n/a	2 874
3	France	n/a	n/a	1 756	1 724	1 866	1 830	1 872
...								
24	Russian Federation	573	556	551	516	518	511	487

Scientific and technical journal articles

Rank	Country	2003	2004	2005	2006	2007	2008	2009
	World	661 159	687 890	709 431	739 985	758 567	783 313	788 333
1	USA	196 445	202 097	205 565	209 272	209 898	212 883	208 601
2	China	28 768	34 846	41 604	49 575	56 811	65 301	74 019
3	Japan	57 228	56 535	55 527	54 467	52 909	51 842	49 627
...								
14	Russia	15 147	14 922	14 425	13 562	13 954	13 970	14 016
...								
24	Finland	4 899	5 019	4 813	5 088	4 990	5 112	4 949

High-technology exports, (current US\$)

Rank	Country	2003	2004	2005	2006	2007	2008	2009	2010
1	China	10 867	16 301	21 593	27 313	30 277	34 012	30 960	40 609
2	Germany	10 620	13 568	14 639	16 317	15 342	15 981	13 996	15 851
3	USA	16 029	17 628	19 074	21 903	21 812	22 088	13 241	14 550
...									
28	Finland	1 048	1 062	1 375	1 399	1 303	1 351	675	578
...									
31	Russia	550	525	382	387	411	507	453	519

Source: www.data.worldbank.org

Expenditure on technological innovation of organizations by sector (mln. rub.)

Sub-industry	2009	%, total	2010	%, total	2011	%, total
Total	399 122	100%	400 804	100%	733 816	100%
Mining	89 788	22%	53 542	13%	70 239	10%
Manufacturing	239 117	60%	260 835	65%	370 006	50%
Basic metals and fabricated metal products	82 704	21%	78 004	19%	92 943	13%
Machinery and equipment	11 229	3%	10 639	3%	11 741	2%
Electrical, electronic and optical equipment	17 948	4%	23 156	6%	27 294	4%
Production of vehicles and equipment	30 901	8%	32 473	8%	41 293	6%
Production and distribution of electricity, gas and water	29 956	8%	35 386	9%	29 197	4%
Communication	26 374	7%	33 710	8%	130 211	18%

IT	6 417	2%	4 974	1%	7 543	1%
R&D*	-	-	-	-	116 526	16%
Other services	7 470	2%	12 357	3%	10 094	1%

Source: www.gks.ru

The share of expenditure on technological innovation in the volume of goods shipped, %

Sub-industry	2009	2010	2011
Total	1,93	1,55	2,20
Mining	2,00	0,96	0,91
Manufacturing	2,04	1,77	1,93
Basic metals and fabricated metal products	3,93	2,57	2,47
Machinery and equipment	1,70	1,47	1,18
Electrical, electronic and optical equipment	3,07	3,10	2,82
Production of vehicles and equipment	3,13	2,16	1,96
Production and distribution of electricity, gas and water	1,11	1,00	0,84
Communication	2,36	2,83	9,52
IT	5,95	3,58	3,91
R&D*	-	-	17,11
Other services	1,36	1,97	1,16

Source: www.gks.ru

* Beginning with the report for 2011, the report included the organization of the R&D

The number of organizations engaged in R&D, on the subjects of the Russian Federation, units

Region	2005	2006	2007	2008	2009	2010	2011
Russian Federation	3 566	3 622	3 957	3 666	3 536	3 492	3 682
The Central Federal District	1 393	1 426	1 536	1 445	1 383	1 358	1 365
Moscow city	787	785	837	787	759	749	733
Volga Federal District	540	547	585	549	532	534	597
North-West Federal District	536	531	606	533	518	502	514
Siberian Federal District	419	425	464	429	410	404	424
Saint-Petersburg city	381	369	429	361	354	338	346

Domestic expenditure on R&D in the Russian regions, mln. rub.

Region	2007	2008	2009	2010	2011
Russian Federation	371 080	431 073	485 834	523 377	610 427
The Central Federal District	206 465	238 762	277 118	288 960	331 759
Moscow city	141 860	165 776	194 820	194 439	219 277
Volga Federal District	51 207	57 148	63 514	74 942	91 012
North-West Federal District	48 088	58 586	64 644	70 737	81 505
Moscow region	41 136	46 089	54 243	64 981	80 138
Saint-Petersburg city	40 043	48 686	53 398	59 223	68 990
Siberian Federal District	23 847	28 690	31 539	33 870	40 713

Source: www.gks.ru

Appendix 5. Indicators of favorable environment in Russia

Other greenhouse gas emissions, HFC, PFC and SF6 (thousand metric tons of CO₂ equivalent)*

Country	1990	1995	2000	2005	% to total, 2005
USA	92 596	109 281	170 020	239 517	33,1%
China	12 054	39 493	81 190	141 394	19,5%
Russia	25 877	40 415	47 535	59 673	8,2%

CO₂ emissions (thousand kt)*

Country	2002	2003	2004	2005	2006	2007	2008	% of total, 2008
China	3 694	4 525	5 288	5 790	6 414	6 791	7 031	21,9%
USA	5 437	5 471	5 563	5 595	5 514	5 581	5 461	17,0%
India	1 226	1 281	1 346	1 411	1 504	1 612	1 742	5,4%
Russia	1 537	1 584	1 602	1 615	1 669	1 667	1 708	5,3%

Forest area (thous.sq. km)*

Country	1990	2000	2005	2010	% to total, 2010
Russia	8 090	8 093	8 088	8 091	20,1%
Brazil	5 748	5 459	5 305	5 195	12,9%
Canada	3 101	3 101	3 101	3 101	7,7%

Organic (BOD) emissions (kg per day)*

Country	2002	2003	2004	2005	2006	2007*
China	n/a	7 066 070	7 957 930	8 358 708	8 823 750	9 428 874
USA	2 305 847	n/a	1 960 254	1 889 365	1 850 753	n/a
Russia	1 582 674	1 520 425	1 470 819	1 425 913	1 388 069	1 381 683

Water pollution, metal industry (% of total BOD emissions)*

Country	2000	2001	2002	2003	2004	2005	2006	2007*
Kazakhstan	34,50	33,09	32,49	34,92	34,83	33,82	33,65	33,33
Tajikistan	21,98	21,31	21,69	21,92	21,68	22,33	18,88	28,17
Ukraine	12,06	13,08	13,54	13,85	14,32	14,59	14,49	13,93
Russia	9,21	9,36	9,00	9,92	9,91	9,76	8,97	8,44

*Source: data.worldbank.org

Contribution of renewables to energy supply, as a percentage of total primary energy supply**

Rank	Country	2002	2003	2004	2005	2006	2007	2008	2009
1	Iceland	75	75,2	74,8	75,9	78,4	80,8	82,9	84,3
2	Brazil	39,4	42,1	42,4	43	43,4	44,5	44,5	45,8
3	Norway	49,5	38,3	40	48,5	42,6	46,5	44,8	43,3
10	Finland	22,2	21,2	23,4	23,6	23,3	23,5	25,7	23,8
	World	12,8	12,7	12,5	12,5	12,5	12,6	12,7	13,1
41	Russian Federation	2,8	2,7	2,9	2,9	2,8	2,9	2,6	2,8

**Source: OECD Factbook 2011: Economic, Environmental and Social Statistics

Appendix 6. SWOT Analysis Table for St. Petersburg city



Appendix 7. Key Russian actors of potential Intelligent Machines Cluster

Machine building companies	
OJSC Power Machines www.power-m.ru	is the leading Russian producer and supplier of end-to-end products and solutions for the power-plant industry, including engineering, production, supply, assembly, service and equipment upgrades for thermal, nuclear, hydraulic and gas-turbine power plants. The Company takes the 4th position in the world by volume of installed equipment.
Kirovsky Zavod www.kzgroup.ru	is one of the largest enterprises in Northwestern Russia. Key areas of Kirovsky Zavod's activities have included: manufacturing of agricultural and construction machinery, metallurgy, power engineering, metal processing and mechanical processing. The plant's main production units produce equipment for agriculture, the fuel and energy sector, road construction, industrial and civil engineering, oil and gas, nuclear energy, defense, the forestry industry, utilities, railroad transport and shipbuilding.
Leningradsky Metallichesky Zavod (LMZ) www.lmz-150.ru	is the largest Russian power machine building enterprise, which carries out design, production and maintenance of steam, hydro and gas turbines of various capacity. Among every 10 turbines in the world one is made by LMZ, and in respect to the manufactured steam turbines LMZ is on the fourth place coming after "General Electric", "Siemens" and "Alstom".
Electrosila www.power-m.ru	is the largest producer of generators in our country. The equipment produced by the enterprise is well-known in 87 countries of Europe, Asia, North and South America, Africa.
JSC Tekhnokor www.tehnokor.ru	is the largest supplier of agricultural, municipal, road and construction equipment in the Northwest region.
JSC The Petersburg Machine-building factory www.mashzavod.su	is engaged in release of mobile hoisting-and-transport cars for repair and development of oil wells. Develops new devices and machine tools and improves outdated.
Obukhov State Plant www.goz.ru	is a major Russian metallurgy and heavy machine-building plant in St. Petersburg.
The Klimov Company www.en.klimov.ru	The Klimov Company is the world-known leading Russian developer of gas turbine engines. Kilmov has its own design bureau as well as state-of-the-art manufacturing and testing facilities. It is the only company in Russia that provides a complete cycle of gas turbine engine development, from concept generation to certification.
Suppliers	
Russian Industrial Co. (RIC) www.cad.ru	is one of Russian leading companies in the field of CAD and GIS software and hardware. The company offers a large variety of services, including research, development and technological works automation, distribution, development and system integration of software and hardware. Our efforts are aimed to solve problems of users working in engineering industry, plant design, architecture and building engineering, geodesy, cartography, land-utilization and others
Balt-System www.bsystm.ru	delivers production: devices of numerical Programd control, portable relay modules, manual stanochny panels, drives of giving and main movement, engines, transformers, throttles and sensors.
Special bureau for designing measuring systems with experimental production facilities (Russian abbreviation SKB IS) www.old.skbis.ru	Measuring encoders fabricated by SKB IS are widely used in production of machine tool plants, in measuring machines and robotics complexes, automated installations in the electronic industry, in systems of process and production control, in research instrumentation and in various measuring devices that work in harsh environments and that require highly precise recording of linear and angular parameters of movement of their components. Thousands of enterprises in Russia and CIS countries are consumers of SKB IS's products. Besides 30%

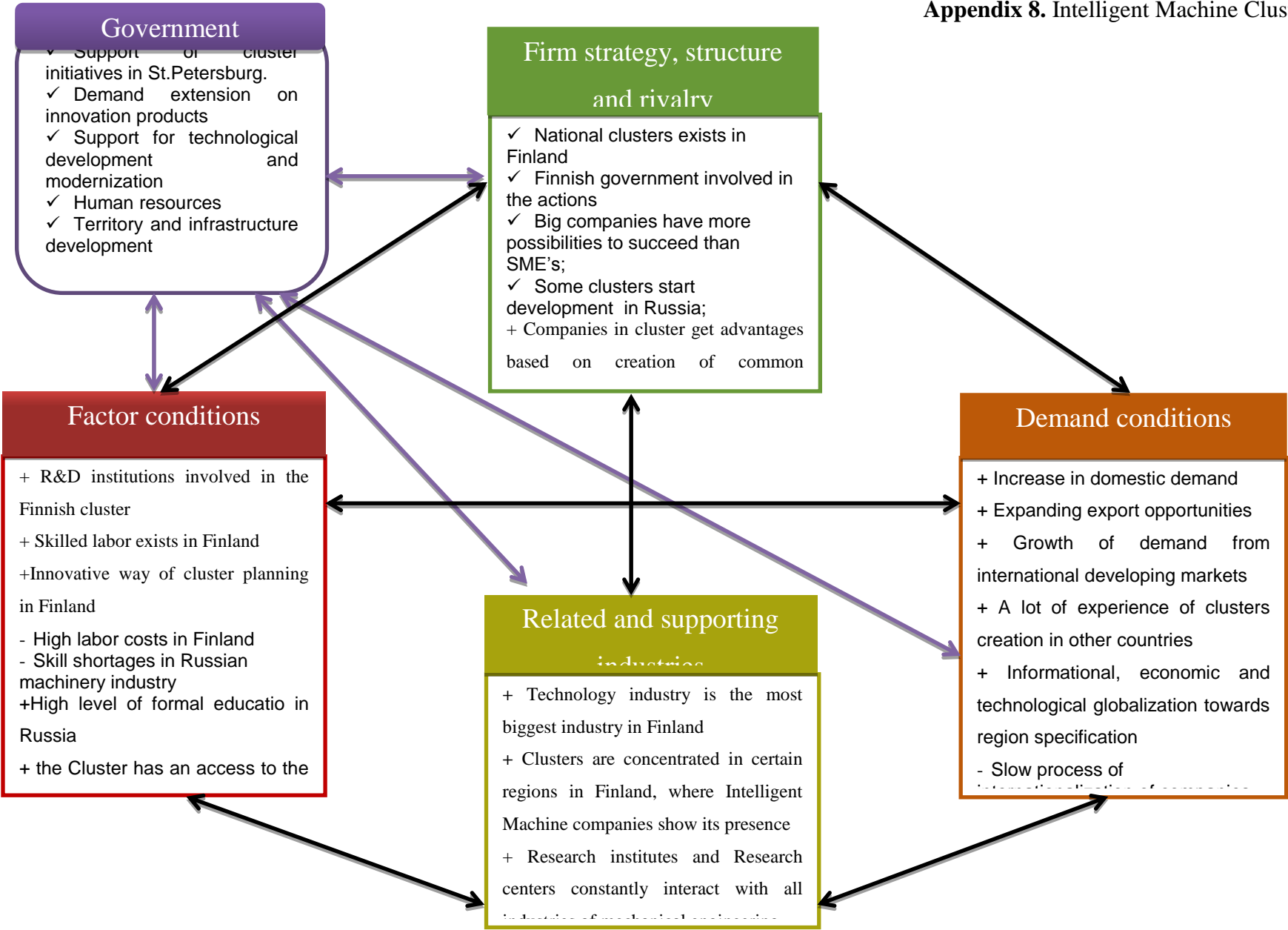
	of products are exported to USA, Canada, Mexico and many European countries.
Kirov-Instrument	is producer of tools and outfit: -production of finished metal articles -processing of metals -drawing of coverings on metals, - processing of metal products with use of the main technological processes of mechanical engineering
St. Petersburg plant of precise machine-tool building	is producer of precise equipment
ASCON Group www.ascon.net	provides a full range of services in software implementation, IT consulting, personnel training, software integration, and support. The number of ASCON installations exceeds 40,000 seats in automotive, heavy machinery, aerospace and defense, agriculture, oil production and power generation, manufacturing and construction, electronics and engineering industries.
The ESG Bureau company www.esg.spb.ru	is the system integrator specializing on consulting in the field of automation of processes of design activity in industrial and civil construction, mechanical engineering, shipbuilding and instrumentation.
Kirov-Stanmach www.k-sm.ru	specializes on the following directions: • Production of machine tools; • Modernization and major maintenance; • Complex service; • Engineering
Agro-3 www.agroneva.spb.ru	takes a leading position in the Northwest region on rendering of engineering services and equipment of food industry enterprises with both separate units of equipment and complex technological lines in the following directions: bakery and confectionery production, meat-processing production, systems of storage, transportation and dispensing of loose products, treatment facilities for the food enterprises
Public joint-stock company VIBRATOR vbrspb.ru	specializes in development and manufacture of measuring, control and regulation devices for industrial applications.
ALPLAST www.alplast-spb.ru	Metal processing
JSC NPO Akkollada www.akkolada-spb.ru	works in the field of mechanical engineering in the direction of metal working, has modern highly technological machines of the numerical Programd control, allowing to make a detail of the increased complexity with high efficiency, accuracy and workmanship of works that gives the chance to participate in innovative programs.
Joint-stock company Autoarmatura www.autoarmatura.ru	is one of the leading enterprises of automobile electric equipment manufacturing in Russia.
Clusters	
Saint-Petersburg Innovative Technological Cluster for machine-building and metal-working industry (ITC MM) www.itkmm.ru	Cluster participants are provided with all they need to achieve continuous quantitative and qualitative growth of their technologies: - effective planning of technological potential and focusing it on key technological competence; - exclusion of groundless spending on potentially under-loaded equipment; - reduction of unit production costs; - expanded access to potential customers; - backup in innovative technological re-equipment.
St. Petersburg Machine Tool Industry Cluster (NP KSP)	The cluster unites almost all producers of machine tool industry and specialized enterprises of the Northwest. The main objective of the cluster is development of joint innovative products from local component parts and ready machine-building technologies within the frames of the life cycle 'R&D – launching into production – serial production'.

Polymeric materials cluster in Saint Petersburg www.kp-plant.ru/	Polymer Cluster of St. Petersburg based on Business polymer park at OJSC Plastic processing plant named after “Komsomolskaya Pravda” Main goals of creation: 1) Global competitiveness of Russian intellectual assets in the sphere of polymer materials and products manufacturing techniques; 2) Import substitution of polymer technologies, materials and products; 3) Entry of Russian polymer companies to the global markets.
Universities and Research Institutes	
Machine-building Institute of St. Petersburg www.zavod-vtuz.ru	The Machine-building Institute of St. Petersburg is the only technical institution of higher education in St. Petersburg, which realizes training and retraining of engineer personnel on the principal of non-stop integrated education (ZAVOD-VTUZ-System). The main directions of educational, scientific and engineering activities are: energy machine-building, technology and automation of production processes, partial preparation production, tribotechnology, corporate information systems, economy and management in machine-building.
Saint Petersburg State Polytechnical University www.spbstu.ru www.spbstu-eng.ru	is a Russian National Research Polytechnical University, which is a multidisciplinary for Russian polytechnical education, a leader in multidisciplinary scientific research, a meta-branch of the world class technology and knowledge based on innovation. In 2010 was founded Joint Science and Technology Institute, including many different Innovative Research Institutions, and Research Institute of Machine-Building Technologies (MashTeh) is one of them.
The G. V. Plekhanov St.Petersburg Mining Institute www.en.spmi.ru	is Russia's oldest higher education institute devoted to engineering. Located in Saint Petersburg, the institute is one of the oldest mining schools in Europe, and home to one of the world's finest and most exclusive collections of gem and mineral samples. During the last years at University are created and successfully function: 1)The scientifically-educational center «Basic researches of minerals-indicators»; 2)The center of collective using «Analytical researches of regional problems of a mineralno-raw complex»; 3)«The network center of collective using the unique equipment for the scientific and educational organizations of St.-Petersburg»; 4)The center of a transfer of technologies for a mountain-metallurgical complex of Russia; 5)The scientifically-educational center of nanotechnologies, etc.
The National Research University of Information Technologies, Mechanics and Optics (University ITMO) www.en.ifmo.ru	is one of the best and oldest higher education institutions in Russia. This school provides training in advanced science and technology. The basic researches are conducted in areas: - Quantum electronics and nonlinear optics; - Optics of biofabrics; - Physical optics and spectroscopy; - Laser and optical technologies; - Power monitoring; - Uncentered optics; - Computer technologies; - Management of difficult systems; - The theory of nonlinear systems; - Computer networks. As a result of researches scientists and experts of university create qualitatively new systems of devices, technologies and materials: laser space systems, laser optical technologies, composite materials, measuring systems, optical sensor controls for industrial and ecological applications.
Saint Petersburg State Electrotechnical University (ETU) www.eltech.ru	The University is a leader in the study of the fields of radio engineering, telecommunications, control processes, computer engineering and IT, electronics, biomedical engineering, management and linguistics.
Russian State scientific	is one of the largest research centers of Russia. The Institute was founded in

<p>center for robotics and technical cybernetics (RTC) www.rtc.ru</p>	<p>January 1968 on the basis of Leningrad Polytechnic Institute (Saint-Petersburg State Polytechnic University nowadays). The activities of the Institute are concentrated in spheres of research, development and creation of space, aerial, ground-based and aquatorial means of robotics and technical cybernetics. The Institute has its own production capabilities, research and specialized test benches. Departments and chairs of Saint-Petersburg State Polytechnic University are functioning on the basis of the Institute, and there are also regional, all-Russian and international seminars and conferences regularly held in RTC.</p>
<p>Agrophysical research institute www.agrophys.ru</p>	<p>The central line of activity of institute: 1)Working out of the general principles of construction of the automated resource-saving production technologies of vegetative production - technologies of "exact agriculture"; 2)Management production process of crops; 3)Researches on a problem of an estimation of risks and adaptation of agriculture of Russia to observable and predicted climate changes according to «the Climatic doctrine of the Russian Federation».</p>
<p>Research Institute of Fine Mechanics www.niitm.spb.ru</p>	<p>The main today is the development, testing, production output, assembling and author's support of complicated failure-safe microprocessor-based control systems for severe conditions of operation.</p>
<p>Central research institute of structural materials "Prometey" www.crism-prometey.ru</p>	<p>is a multi-specialized state unitary enterprise which carries out orders of Federal ministries, home and foreign companies working in different branches of industry. The institute in its activities is focused on "large" industry and contributes the development of medium and small-sized enterprises, especially in the innovation field. FSUE CRISM "Prometey" is a head organization of the brunch in the field "Structural nano-materials" in the National Nanotechnological network (NNN). CRISM "Prometey", being a National Research Centre of Russian Federation, carries out fundamental and applied research work and developments to create prospective patterns of the new millennium engineering. Main directions of the institute activities: 1)Hull metallic and nonmetallic materials for use in shipbuilding; 2)Materials for use in shipbuilding and machine engineering; 3)Materials for nuclear and heat power engineering; 4)Materials for the facilities of oil and gas production, transportation and refining; 5) Materials for the facilities of oil and gas production, transportation and refining.</p>
<p>Scientific research institute of currents of high frequency of V.P.Vologdina www.vniitvch.ru</p>	<p>is the leading developer, the manufacturer and the supplier of the electrotechnical multipurpose equipment. Specializes in area of creation of technologies and the equipment with application of currents of high frequency and ultrasound. The technologies developed by institute allow to solve challenges of manufacture of various details from metals and plastics. Ecological cleanliness, high efficiency do technological processes and installations irreplaceable in the industry.</p>
<p>Federal State Unitary Enterprise Scientific and Industrial Corporation "Vavilov State Optical Institute" www.npkgoi.ru</p>	<p>Carries out the fundamental and exploring research in prospective directions of development of optics and photonics within the frameworks of federal goal-oriented programs, grants of Russian Foundation for Basic Research, international scientific and technical programs, and based on initiative activities. Develops and manufactures the samples of new optical, electro-optical, and laser equipment by request of the state, by request of Russian enterprises, and within the frameworks of export contracts. Publishes the Journal of Optical Technology. Takes part in organizing and participates in the All-Russian and international scientific seminars and conferences on optics and photonics. Educates the highly skilled specialists for Russian optical science: the</p>

	dissertation council and post-graduate study are available in SOI, and it provides the possibility of educating the students and postgraduates of Saint Petersburg State University of Information Technologies, Mechanics and Optics in the laboratories and manufacturing shops of corporation.
Institutions for collaboration	
Union of Industrialists and Entrepreneurs of St. Petersburg www.spp.spb.ru	The goal of this Union is to help businesses and enterprises survive, contribute to the city's industrial potential and effectiveness of employee teams, and to facilitate interaction with state bodies of authority in the sphere of supporting stable economic and social development.
St. Petersburg Chamber of Commerce and Industry www.spbcci.ru	The Chamber aims to facilitate the development of St. Petersburg economy and the establishment of favorable conditions for entrepreneurial activities for Russian and foreign companies, to protect their interests, rendering a broad spectrum of services for business. The mission of the Chamber is to establish reliable partnership with all companies operating in the region, accelerate the development of commercial relations between them and improve the business climate in Saint-Petersburg. Spb CCI unites more than 2000 Russian and foreign small, middle and large companies which operate in different fields of business in Saint-Petersburg and Leningradskaya Oblast. Providing the practical support to Russian and foreign entrepreneurs in establishing business contacts with partners, the Chamber assists the development of goods and services export and the flow of investments in Russian economy.
Association of Industrial Enterprises of St. Petersburg www.appspb.ru	Association main objectives are: - Maintenance of protection of the rights of members of Association and representation of their general interests in the state and other bodies, the international organizations; - Representation of interests and protection of the rights of the members in mutual relations with trade unions, their associations, public authorities and local governments in sphere of the economic relations sociolabor and connected with them, and also assistance to effective functioning of system of sociolabor partnership at the industrial enterprises; - Coordination of enterprise activity of members of Association and association of their efforts in the field of the decision of social and economic and legal problems of development of industrial production, increase of the status and competitiveness of the Russian manufacturers.
Russian Engineering Union www.soyuzmash.ru	There are 64 regional representations of Organization in Russian Federation. It is a network of more than 3,000 engineering industry companies. Regional representations are dedicated to the promotion of common interests of more than 7 000 mainly large/ medium size member companies and around of 3 million employees of mechanical engineering industrial sectors in Russian Federation. Mission statement : 1) To facilitate Russian economic development, competitiveness, dynamics, diversification and innovation. 2)To join the Russian engineering industry companies in maintaining and defending the common interests with state authorities, in civil society institutions, as well as in the international arena 3)To form a strategy for the development of engineering industry in Russia, to participate in shaping public policy mechanisms for the modernization and development of the national mechanical engineering complex at the level of major industrialized countries.
Institute of Regional Innovation Systems www.innosys.spb.ru	The basic task of IRIS is establishing and supporting the national innovation system by way of developing regional innovation systems in the RF territorial subjects. Major tasks: 1) Analytical, informational and expert support of the regional governing bodies responsible for elaboration and realization of innovation policy; 2) Engaging the leading national and international experts, members of state

	<p>and non-state organizations and institutions into a monitoring system meant for support and correction of the regional innovation policy;</p> <p>3) Assistance in development of human resources potential in the sphere of innovation activity both for educational, scientific and commercial organizations and for regional governing bodies;</p> <p>4) Offering a dialogue on burning questions of regional innovation development by generating appropriate innovation networks, organizing international conferences, seminars and publications.</p>
<p>The committee for economic development, industrial policy and trade (St. Petersburg) www.en.cedipt.spb.ru</p>	<p>is tasked with long-term objectives of development of growing economy with high level of competitiveness and share of human capital. The Committee is comprised of the following 6 blocks each formed of specialized departments and units: Economic Planning; Development of Industry, Agri-Industrial Complex and Economic Security; Support of Industry, Small and Medium-Sized Entrepreneurship; Development of Innovations and Investment Attraction; Consumer Market and Licensing; Improvement of Public Contracting, External Economic Activity, Development of Medical and Pharmaceutical Projects.</p> <p><u>Tasks:</u></p> <ul style="list-style-type: none"> • Implementation of socio-economic development program of St. Petersburg; • Development and implementation of programs aimed at supporting industry, small and medium-sized businesses in St. Petersburg; • Support of implementation of investment projects in St. Petersburg; • Implementation of innovation policy in St. Petersburg; • Implementation of cluster policy; • Regulation of trading activities; • Licensing of certain activities; • Organization and implementation of citywide celebrations, forums and trade fairs.
<p>St.Petersburg contact center “Bizkon” www.bizkon.spb.ru</p>	<p>St. Petersburg Information Business Centers established in Finland and Estonia play an important role in development of economic relations and cross-border cooperation of St. Petersburg and the Leningrad Region with these countries.</p> <p>The main functions:</p> <ul style="list-style-type: none"> - organization and servicing for the permanent exhibition of information materials of St.Petersburg Administration and enterprises in the Centre premises; - information, consulting and marketing services; - holding of topical seminars, conferences , symposiums; - holding of firms presentation; - preparation and holding of contact meetings and negotiations of firms at the international level; - assistance in search of business partners ; - assistance in initiation and preparation of the joint projects financed on the regional programs and on the EU programs.



**Joint course project between Master programs of
Saint-Petersburg State Economic University
and Saimaa University of Applied Sciences**

**ANALYSIS OF OPPORTUNITIES FOR DEVELOPING TRANS-BORDER
FINNISH-RUSSIAN INTER-ORGANIZATIONAL NETWORK CLUSTER IN
TOURISM INDUSTRY**

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Lena Kostenyuk

INTRODUCTION

Tourism is rapidly growing field in a worldwide scene. Finnish – Russian tourism has grown significantly during recent years, as well as business itself between these two counties. Russian tourists are the largest group visiting Finland and Finnish tourists are increasingly finding possibilities in Russian tourism markets.

This means that both countries need to find out the ways to improve together this particular sector and for entrepreneurs and operators it means finding other companies to create new cooperation and future development. Clusters have been seen successful way not only to create strong basis but something new.

This research main objective is to provide basic information on competitiveness of the both counties Russia and Finland, to analyze the current state and opportunities tourism cluster to grow in this particular area, and create a tourism cluster model for use of future improvement.

Methods used are M. Porter's Country Diamond Model, PESTLE – analysis, as well as several global and national researches sources via Internet.

This research can be used as a tool of competitiveness improvement and tourism cluster development in the area of South Karelia and Leningrad region. It helps entrepreneurs, actors of business and tourism field, educational institutions and organizations to see better the situation today and to create visions and actions for the future.

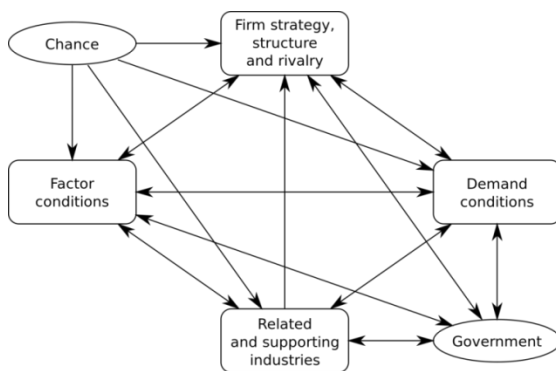
Karelia region has willingness to develop as a beautiful nature destination. One of the main strengths is unique location and short distances between these two countries. Increasing cooperation means finding common views and ways to find marketing and sales channels together, as well as education cooperation. Conclusions show that main base exists but a lot of work has to be done for the future development. This means that both countries need to find out the ways to improve together this particular sector and for entrepreneurs and operators it means finding other companies to create new cooperation and future development.

Chapter 1

Porter's Diamond Model of national competitiveness

1.1 Russia: Tourism industry

The Diamond model of Michael Porter for the Competitive Advantage of Nations offers a model that can help understand the competitive position of a nation in global competition. As a rule Competitive Advantage of nations has been the outcome of 4 interlinked advanced factors and activities in and between companies in these clusters. These can be influenced in a pro-active way by government. These interlinked advanced factors for Competitive Advantage for countries or regions in Porters Diamond framework are (Porter, 2006):



For tourism industry (João M. Ferreira; Cristina M. S. Estevão, 2009):

1. Factor conditions

Human resources (training, labor law), physical and tourism support infrastructures, accessibilities, natural, historic and cultural resources

Human resources (training, labor law)

Russia's educational system has produced nearly 100% literacy. About 8.1 million students attended Russia's 1,108 institutions of higher education in 2008, but continued reform is critical to producing students with skills to adapt to a market economy. The Russian labor force, amounting to nearly 76 million workers in 2010, is undergoing tremendous changes. Although well-educated and skilled, it is largely mismatched to the rapidly changing needs of the Russian economy. There are a lot of universities that prepare specialists for tourism sphere, so we can say that though they are not fully adapted for the market, there is a certain supply of specialists for this sphere.

The relations in labor market in Russia are regulated by Labor Code, which establishes the general framework for labor contracts, and outlines guarantees and privileges and the role of trade unions. The Code covers all employees and all forms of organizational ownership. There are strong rules governing most aspects of the employment relationship within the enterprise; regulations still provide for trade unions to assume certain functions that are viewed as managerial prerogatives in most market economies; and the law enshrines extensive guarantees and privileges for particular groups that are far beyond what is found in Western labor laws. So we can say that the labor relations in Russia have strong legal basis.

Natural, historic and cultural resources

Russia's territory stretches for 10 000 km from east to west and almost for 3 000 km from northern latitudes to subtropical areas in the south. A variety of landscapes provides opportunities to develop many types of tourism. Russia has sea resorts at the Black Sea in the south and the Baltic Sea in the north-west which makes it suitable for beach rest, medical treatment and rehabilitation. The presence of mountains provides opportunities for mountaineering (rock climbing, caving, hiking, rafting along rapid mountain rivers and skiing, mountain biking and delta plane sports) as well as rehabilitation at mineral water resorts. Full-flowing and wide rivers like the Volga, the Yenisei or the Lena give excellent possibilities for cruises, fishing and various types of rafting. Other cruising destinations include north-western waters of Russia. As a rule, numerous lakes are picturesque and clean. Lake waters are clean not just by appearance: in Karelia and in the Baikal it is drinkable. The forests of the Central Russia, foothills of the Caucasus, Siberian taiga and the Far East are full of animals and birds attracting hunting tour lovers.

Russia's rich history bears the traces of Vikings, ancient Slavs, Mongols and Tatars, Scythians, Swedish, Greeks, Genoese and other peoples. Their ancestors inherited certain features of their appearances, faiths, cultures, languages and traditions. This factor stimulates internal tourism development and makes Russia's peoples interesting for each other. Democratic and authoritarian rulers replacing one another, built palaces and mansions, established museums, destroyed Christian churches and Buddhist temples; left us their mausoleums and grand multi-store buildings, powerful power plants and at the same time, camps for the repressed, corn fields, entered space, created unique armaments and restored temples. All these events made Russia the country any visitor may now explore and experience at an excursion tour.

Accessibilities

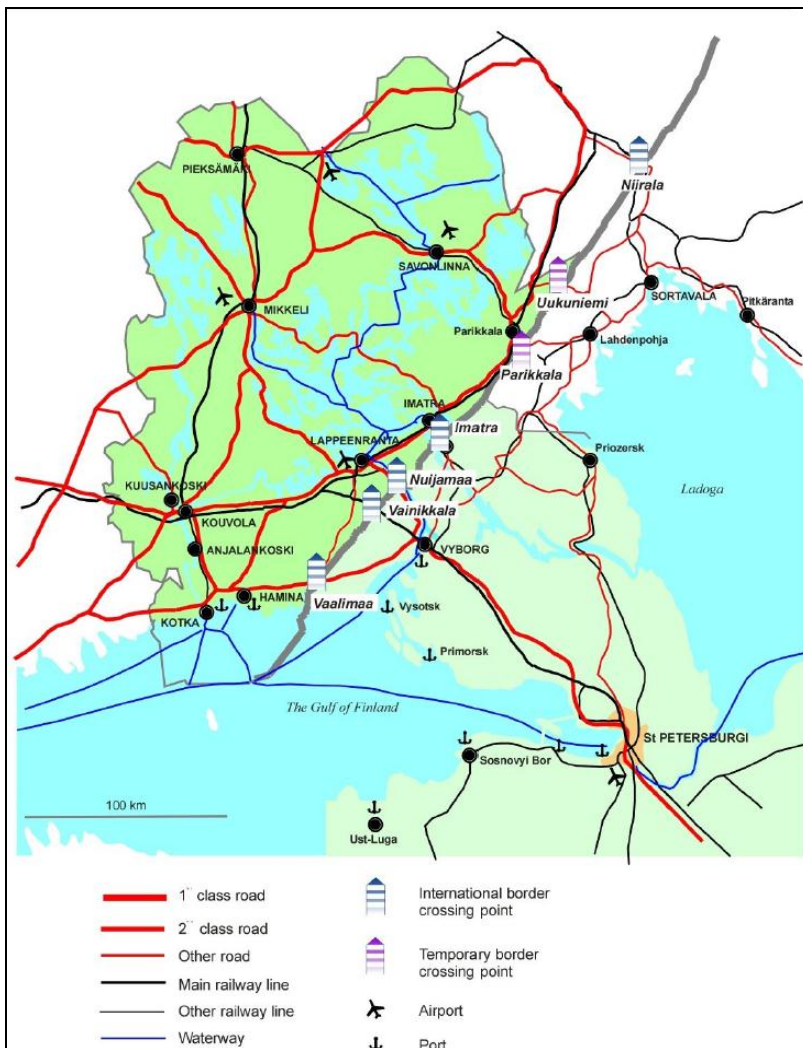
In addition to natural and historic and cultural attractions, there are certain social factors having a positive influence over tourism development, that is a high purchasing power of foreign currencies and freedom of travelling over the major part of the country's territory including areas prospective from the tourist point of view such as the Far East, Sakhalin, the Kurile islands, the Urals, the North of Russia as well as Nizhny Novgorod and Samara which were formerly closed for foreigners.

Physical and tourism support infrastructures

Russia's physical infrastructure largely dates back to Soviet times and has not been adequately funded and maintained in recent years. Particularly affected are the rail and road networks, power generation and transmission, communications systems and building stock. The federal government is actively considering plans to reorganize the nation's rail, electricity and telephone systems, as well as the public utilities. We can surely say that most important supporting infrastructure for tourism industry is *Transportation*. Four international border crossing points are located in the area between Finland and Russia. In 2006, the total of crossings amounted to 5.2 million (of which approx. 70 % were Russian citizens). The number of border crossings increased by 6 % from 2005.

Border crossing points and main international transport links

*Source: SOUTH-EAST FINLAND –
RUSSIA ENPI CBC PROGRAMME, 2007–2013, p12



The infrastructure and new border crossing facilities have been built at the border crossing points in recent years. However, one issue of importance that need to be addressed urgently concerns the long queues of vehicles waiting to enter Russia at Vaalimaa - Torfjanovka, Nuijamaa - Brusnichnoye, and Pelkola - Svetogorsk. The problem is caused by a positive development, i.e., the increased volume of trade between the EU and Russia, which has increased approx. 10 % per annum over recent years. The existing infrastructure on both sides of the border is used at their maximum capacity and various administrative problems at the border crossing points are still constraining the flow of goods and people between Finland and Russia. Traffic from North America, Western Europe, North-West Russia, Moscow, and the Far East pass through South-East Finland. Road traffic between South-East Finland and Russia is also continuously growing. The main road transport link is the highway E18 that passes to St. Petersburg and Moscow via Vaalimaa - Torfjanovka border crossing point. St. Petersburg and the Leningrad Region constitute a node of transport networks with straight-through highways, a railroad and, to a degree, canals that facilitate connections to Moscow, the Murmansk Region, Finland, the Baltic States, and the Southern parts of the Russian Federation. St. Petersburg and the Leningrad Region are being developed as an international transport center of Russia.

Air Transport: A busy international airport located around 20 km / 12 miles to the south of St. Petersburg city centre, Pulkovo Airport is currently the fourth busiest airport in the whole of the Russian Federation, with annual passenger figures of over 9.5 million. The two separate passenger terminals, Pulkovo 1 (domestic) and Pulkovo 2 (international), are home to almost 70 different airlines, with the largest choice of destinations being offered by the Russian airlines of both JSC Transaero and Rossiya.

Road Transport: St. Petersburg has a well-developed road network with major highways and national roads, connecting Northwest Russia with the rest of Russia as well as Nordic and Baltic countries. St. Petersburg and the surrounding Leningrad region have the highest density of roads with a road network covering approximately 1,300 km. Railroad network which is one of the most efficient and dynamic forms of transport in the region is also connected to the Large Port of St. Petersburg and other port complexes in the region.

Water Transport: Inland water transport plays an important role in the transport complex due to the wide continuation of the Neva – Ladoga Lake system. While the Svir-Onega Lake system provides access to the Republic of Karelia, the Belomor-Baltic canal provides access to the White Sea.

Rail Transport: St. Petersburg's railway hub includes 423 km of railroads. Railways and stations in St. Petersburg occupy approximately 4 thousand hectares. A new high-speed train Allegro was launched on route St. Petersburg - Helsinki (Finland) - St. Petersburg in December 2010.

2. Demand Conditions

Number of outbound trips almost doubles the number of inbound trips. During 2011, tourism flows outbound in Russia generated almost double the number of trips than tourism flows inbound as each category registered rapid double-digit growth rates. Many inbound visitors—especially those from countries outside of the CIS region and Baltic States—still perceive Russia as a mysterious and dangerous destination and its two largest cities Moscow and St Petersburg have well-earned reputations as expensive places to visit. In addition, the majority of Russians prefer outbound destinations such as Turkey and Egypt to local destinations for beach holidays due to the lower prices and higher quality of service on offer. Domestic and external tourism in Russia is characterized by a variety of types. Among the ones developing the most rapidly, one can name environmental, sportive, extreme, mountaineering, cognitive, recreational, cruise, fishing and hunting, event-oriented and gastronomic types of travelling. Individual and young people's tourism is also becoming more and more popular. So we can say that each tourist can find something on his taste.

Tourism flows inbound and tourism flows domestic are two categories with massive development potential over the forecast period. However, significant improvements will need to be made by key industry players as well as Russia's travel and tourism authorities in order to develop Russia's travel and tourism infrastructure and effect changes in the attitude towards travel and tourism in Russia.

3. Existence of Related and Supporting Industries

Accommodation, bars, restaurants, nightclubs, varied leisure, sports and cultural activities

Several multinational hotel chains remain highly interested in expanding their businesses into Russia. The availability of modern hotels remains negligible or even non-existent in many large cities in Russia's less developed regions. However, Russia has the potential to become a much more attractive destination for both international and domestic tourists as the preparations for the major sporting and political events which Russia is due to host in the near future such as the Winter Olympic Games and FIFA World Cup are leading

to improvements being planned and implemented. All major players in travel accommodation in Russia, including Marriott International Inc, Rezidor SAS Hospitality Group, Accor Group, and Hilton, have announced plans to expand into various different Russian regions. The last ten years have brought many changes to the Russian entertainment scene. Moscow, the capital, has witnessed the opening of many five star restaurants, designer boutiques, retail chain stores and large supermarket chains. Within Russia's largest cities there is a whole range of international cuisine available alongside all the traditional favourites. The cafe and bar scene has also expanded to include many stylish new venues catering to a diverse range of tastes. Nightlife is buzzing particularly in the capital and St Petersburg with many new large clubs offering all of the latest music. Culturally, Russia has it all including the famous Bolshoi Theatre and many more excellent theatres, opera houses and concert venues.

Main excursion centers of Russia, such as Moscow with its magnificent architectural ensemble of the Kremlin, Saint Petersburg with its palaces, or ancient towns of the Golden Ring, are known all over the world. Over the next decade, Russia will host many large-scale political, cultural and sporting events including the APEC Summit in Vladivostok in 2012, the World University Games in Kazan in 2014, the Winter Olympic Games in Sochi in 2014, the FIFA World Cup in 2018 and many others. All of these events will require serious preparation in terms of transportation, travel accommodation, tourist safety and security and the quality of the travel and tourism products and services on offer in order to meet the high requirements of the organisers of these events. The thorough implementation of the development of all necessary requirements and the proper management of all of these events will help to create a solid base for the long-term future development of inbound and domestic travel and tourism in Russia. These events will be attended and watched by millions of local and international spectators, many of whom will pay attention not only to the events, but also how Russia has managed to improve its travel and tourism and how hospitable the country now is.

4. Firm strategy, structure and rivalry

Barriers to entry and exit from the market; dense business tissue, consisting of companies in permanent competition, but when necessary they know how to cooperate; differentiation and motivation.

If we want to find out barriers for entry and exit from the market first of all we must analyse barriers for SMEs as for large firms there are actually no any serious barriers. Large firms often try to adapt the society to their own rules of play, for example, to unify and to standardise the needs of people so that these needs can be satisfied with only one product. Large enterprises are therefore rather egoistic, dominating and overpowering while SMEs manifest themselves as collective, integrative and adaptive. Hence, when necessary they know how to cooperate and they will surely cooperate in order to compete with large firms in this sphere. SMEs also help to diversify products and services, which is so needed in the tourism industry. At the same time, however, Russian SMEs face a number of problems caused first of all by the weaknesses of small business, such as:

- A deficit of equity and limited investment capacity
- High dependence on the despotism of the state authorities
- Limited opportunities for employees to be educated and trained
- Limited financial and human resources needed for marketing research and marketing measures

- Limited resources for technical equipment and the implementation of latest technology
- Disadvantages in purchasing goods and services needed for their own businesses
- High seasonality (particularly in tourism)
- Low image of solvency
- Practically no possibility to influence prices in the market.

Based on the weaknesses of Russian SMEs and on the results of market-information analyses the key problems of the current development of Russian tourism SMEs seem to be the following:

- Imperfection of the law: inefficient licensing regulations, over-centralisation of licensing functions, much confusion in the land law
- Imperfection of the tax system in Russia: fewer tax benefits for SMEs and sectors with low-profit rates, such as tourism
- Restricted access to financial and credit resources: interest rate for SMEs is 13–25% (in foreign currency), there are numerous pre-conditions for granting credits
- Underdeveloped general infrastructure of the country: bad roads and travel facilities, shortage of accommodation facilities
- No policy for co-ordination, customer information and purposeful promotion of the Russian tourism product in the domestic and international markets.

We have named and analysed all factors for tourism industry that give country competitive advantage. Now it is turn to analyse travel and tourism competitiveness of Russia by indexes and sub indexes.

Travel and Tourism Competitiveness Index and subindexes

Pillar title	Emerging economies (106)			2009		2011	
	Average rank	Highest	Lowest	Rank	Score	Rank	Score
	86.0	25	139	-	-	-	-
ICT infrastructure	85.9	13	139	50	3.39	46	3.87
Human resources	85.0	12	139	88	4.84	78	4.78
Safety and security	84.5	17	139	129	3.45	111	4.01
Ground transport infrastructure	84.4	10	139	81	3.17	95	3.09
Air transport infrastructure	84.0	4	139	30	4.37	30	4.32
Cultural resources	84.0	16	139	30	3.92	35	3.72
Health and hygiene	83.8	1	139	10	6.65	11	6.62
Tourism infrastructure	83.7	4	139	60	3.51	45	4.57
Policy rules and regulations	81.8	10	139	114	3.52	126	3.57
Environmental sustainability	80.8	8	139	114	3.93	98	4.18
Prioritization of Travel & Tourism	77.8	1	139	75	4.17	102	4.04
Affinity for Travel & Tourism	73.8	1	139	123	4.14	136	3.65
Natural resources	72.6	1	139	23	4.58	27	4.44
Price competitiveness in the T&T industry	58.3	1	133	108	4.05	75	4.48

From 2009 to 2011 positive changes have been marked only with these factors: ICT infrastructure, human resources, safety and security, tourism infrastructure, environmental sustainability and price competitiveness in the T&T industry (remarkable change). But even these positive changes didn't bring many factors close to average ranks. Russia has high ranks with these factors: Natural resources, cultural resources, tourism infrastructure, health and hygiene, air transport infrastructure, ICT infrastructure. It is interesting to mention that there was marked certain decrease by all these factors (except ICT infrastructure) from 2009 to 2011. Probably the government began to pay more attention to other factors as with these factors everything was much more better.

Competitiveness of the border region: North West Russia (Leningrad region)

After the tough state of the economy of 90-ies, the Leningrad region fitted into its market niche and learned to benefit from its location advantage. As a result, it began to perform well enough compared to St Petersburg, and sometimes it even demonstrated higher growth rates. The region concentrated on a few industries, using the region's main competitive advantages. Favorable climate, experience in agriculture and proximity of the major markets – St Petersburg and Moscow – facilitated an efficient development of agriculture and foods production. Region's location benefits, and its role of transport hub, allowed the region to successfully promote the development of port and transportation infrastructure (Alexei Prazdnichnykh, article 188, 2008).

In recent years the competitive environment for the region has become more challenging, which resulted from a tougher competition for investment on the regional level. The greatest challenge came from the city of St Petersburg, which has been aggressively bringing in foreign investment. As a consequence, increased investment to the city makes for a brain drain of human resources from the region. Other regions of the Northwest Federal District have also joined the competition for investment and they are becoming more efficient in using their own advantages. Leningrad region's cluster portfolio is highly diversified and developed compared to other Russian regions, large part of its clusters are competitive and exhibit high productivity rates. Its key clusters are forest products, furniture, construction materials, chemical products, and agricultural products. Moreover, a number of latent clusters, among them automotive, textiles, hospitality and tourism, are not yet developed enough, but are already competitive, and have bright development perspective. The region's strongest endowment is its Baltic Rim location, in between Russia and the EU. Region's large pool of low cost land resources is still its business environment advantage. Several regions' weaknesses can also be named, among them, availability of qualified workers, lack of quality transportation and logistics infrastructure. Access to electricity infrastructure is also a problem. Other region's business climate disadvantages include underdeveloped suppliers, lack of secondary professional education and relatively low internal market size. But these weaknesses are partially counterbalanced by the closeness to St Petersburg, where necessary suppliers, educational programs, human resources and retail distributors can be found easily.

1.2 Finland: Diamond model of national competitiveness

National Competiveness can be analyzed by the Diamond Model of Michael Porter. Model offers a useful tool to understand one nation's position in all global competition, or a certain sector's competitiveness

compared to worldwide, globally or regional level. Porter has split the diamond into four different main factors and into two variables. These four main factors are:

- Firm Strategy, structure and rivalry (leadership)
- Factor conditions (infrastructure, natural resources, capital, workforce)
- Related and supporting industries (innovation, product development)
- Demand conditions (character and quality of domestic market)

These four main factors create an environment to the companies to make a business. They affect positively or negatively to the company’s business environment and the compatibility of rivalry in business life in a certain special sector. It’s about these factors if there exist skills and resources to develop business life in a certain country. These factors also affect to the employers and employees targets and makes companies to invest future development. Usually those countries and special sectors succeed that are continuously looking forward finding new advantages and development points. Those sectors of which diamond are the most advantageous are making the best positions in a rivalry of the business sector. The diamond is a “package” where all the details must be notified when speaking about total advantage. (Porter 2006, 114 -115)

Two variables that affect to the diamond’s four basic factors are government and a coincidence. Government’s role is to encourage companies to raise their performance, stimulate early demand for advanced products, to focus on specialized factor creation and stimulate local rivalry by limiting direct cooperation and enforcing antitrust regulations. (QuickMBA, 2010)

Finland’s competitiveness and competitiveness in tourism sector

According to the Travel & Tourism Competitiveness Report 2011; Finland’s population in 2009 was 5,3millions. GDP was 238,6 and the real GDP growth was -8,0 percent. Out of 163 economies, Finland’s environmental Performance Index was 12. Detailed information can be seen from the table above. (The Travel & Tourism Competitiveness Report 2011)

Travel & Tourism Competitiveness Index	Rank	Score (1-7)
1. T&T regulatory framework	5	5.7
2. Policy rules and regulations.....	5	5.4
3. Environmental sustainability.....	7	5.7
4. Safety and security	1	6.5
5. Health and hygiene	12	6.6
6. Prioritization of Travel & Tourism.....	65	4.5
7. T&T business environment and infrastructure.....	30	4.8
8. Air transport infrastructure.....	16	4.9
9. Ground transport infrastructure.....	21	5.2
10. Tourism infrastructure	42	4.8
11. ICT infrastructure	17	5.2
12. Price competitiveness in the T&T industry.....	128	3.6
13. T&T human, cultural, and natural resources	25	4.6
14. Human resources	7	5.7
15. Education and training.....	5	6.0
16. Availability of qualified labor.....	18	5.5
17. Affinity for Travel & Tourism.....	83	4.5
18. Natural resources	66	3.3
19. Cultural resources.....	26	4.7

1. Factor Conditions

Finland has well-developed production-relevant conditions, which includes skilled infrastructure and technology, innovation capabilities and labor conditions. Our education system is public; nearly 70% of the population under aged 25 to 64 has completed upper secondary or tertiary education, and 30% have

university or other tertiary qualification, which is the highest number of the whole EU countries. It is said that Finland is one of the most developed information countries of the world. Most of the Finns have own cell phones and wireless internet connections which offers a possibility to international communication and rapid connectivity all around the world. Rapidly growing problem is aging of the population. Lack of skilled young workforce is going to be a massive problem in the future. (Mutebi, L. 2009)

Finland has over 20 international airports and more than 100 airfields. Transportation is extensive and road transportation is the most popular mode. Metro and tram systems are used only in Helsinki Metropolitan – area. Buses and trains are mainly used in rural areas of Finland. (Mutebi, L. 2009)

Finland is one of the most investing countries when speaking about innovation and product development. Ministry of Employment and Industry supports a national innovation program and the results can be seen as an amount of patents Finnish companies and industries have registered in recent years. (Mutebi, L. 2009)

According to the Travel & Tourism Competitiveness Report 2011; Finland's T&T industry in 2010 was 2,6 percent per GDP and 2,5 percent per employment. Industry is forecasted to grow until 2020 3,6 percent per GDP and 3,3 percent per employment. T&T economy was 6,9 percent per GDP and 7,0 percent per employment; GDP is forecasted to grow 3,8 percent and employment 2,8 percent. (The Travel & Tourism Competitiveness Report 2011) It's obvious that tourism as an industry and as an employment sector is a growing field for whole Finland's economy in the future competitiveness.

2. Demand Conditions

Even Finland is a small country its domestic market can be seen comparably very strong. Finnish customers appreciate companies constantly improve new offerings which again drives domestic companies compete with innovation and product development. Domestic demand is very often based need of the customers and companies rivaling top placements are very customer orientated. (Mutebi, L. 2009)

Finnish tourist appreciates their own country resources and possibilities when speaking about tourism sector. We do have a very strong culture of summer housing tourism; which is a quite unique phenomenon in a whole world. Finland has a very strong domestic markets and demand conditions. Especially during lower economic situations Finnish customers trust possibilities nearby. Innovative market improvement is needed not only foreign customers but also Finns.

3. Related Industries

Most important industrial clusters for Finnish economic success are: information and communications, forest, metal processing, mechanical engineering, foodstuffs, business services, construction, energy and a healthcare. Their presence facilitates the exchange of information and promotes a continuous exchange of ideas and innovations, creating internationally competitive business. (Mutebi, L. 2009)

A strong support to Finland's advantage in tourism sector gives ICT technology and communication as well as health and hygiene field. Finland's culture heritage and cultural resources are quite unique compared to the other European Union countries, for example; so as a business field, culture has a lot to offer for tourism sector as well. Transportation and logistics are considered good, but in a view of a tourism sector we do have a lot to improve to maintain competitiveness. (The Travel & Tourism Competitiveness Report 2011)

4. Firm strategy structure and rivalry

Finland's business climate is considered very progressive and dynamic. Companies are created, organized and managed with in direct competition. Finland has reached many good positions in rankings considered improvement, quality and global competitiveness. Finnish business climate don't know corruption and it's well-known for its equality, informality with leaders and led, and multinational companies with a strong know-how leaders. The most important Finnish brands are quite well-known within their target markets and led with a strong quality based leadership. Finnish government and economy life supports companies to reach competitive advantage. (Mutebi, L. 2009)

Finland's competitive advantage in tourism sector relies in safety and security, environmental sustainability, education and training combined to human resources and health and hygiene. We still do have a lot to improve when speaking about price competitiveness, priority of tourism sector in business life, creating a good infrastructure for tourism and affinity considering tourism as a business. (The Travel & Tourism Competitiveness Report 2011)

The goal of Finland's tourism strategy is to create the prerequisites for the development, growth and competitiveness of year-round tourism and the related business operations. Tourism is seen as a significant source of employment of which helps country's economy to expand. Also, tourism can be seen as a remarkable factor as a source of regional livelihood in certain areas. (Jakosuo 2011)

Competitiveness of the border region: South Karelia Region

South Karelia area consists of 12 municipalities and two cities: Lappeenranta and Imatra. The distance from Lappeenranta and Imatra to St Petersburg is about 210 kilometres. The meaning of Russian tourists has increased remarkably in the Karelia region; in 2010 they spent 62.5 million euros and 196.7 million when visiting Imatra or Lappeenranta. (Jakosuo 2011)

Competitiveness of the South-Karelia border region is combination of strong cultural heritage, human resources and skills, education and workforce, knowledge, possibility to exploit other business fields for the use of a tourism sector and amazing natural resources. In Karelian region, there are about 2,000 lakes and two thirds of the area is covered by forest. There are also three national parks and numerous Orthodox churches and chapels. Important element as a transportation way is Saimaa canal in a length of 43 kilometers. Finland is considered as an attractive travel destination with beautiful nature. One of the main strengths Karelia regions is a unique location next to Russia. (Jakosuo 2011)

Travel and Tourism is one of the main business sectors in this area and supported by municipalities and important organizations. It's also understood as a point of competitiveness and largely improved. Region's main strategic goals are to widely utilize Russia's markets and purchasing power. The future visions include ensuring Russian trade, investments and increase of tax-free sales. (Jakosuo 2011)

According to South Karelia's tourism strategy for 2015; the vision would be that South Karelia would be that most important tourism region based on utility of Saimaa Lake, closeness of border and border region and unique culture heritage of Karelia area. The statement puts interesting tourist attractions and products, events and supply of leisure housing its main points. Creating a Saimaa brand is one of the main goals to attract more tourists. (Etelä-Karjalan matkailustrategia 2006)

South Karelia has a lot to offer both domestic and foreign tourists. Its various nature attractions and activities can be experienced in any time of year. Good accommodation and catering possibilities creates a good basis for tourists to enjoy their trip. History and culture heritage strongly presents both in Imatra and Lappeenranta regions. Short distances between border cities make it easy to visit shortly or stay longer. Spa culture is recognized one of the main enjoyments during customer's stay; both cities have their own Spas. Also meeting and conference possibilities are well presented. Shopping possibilities are various and still widening when IKEA starts its business in Lappeenranta in the near future. South Karelia is easy to reach by plane, by train or by car. (GoSaimaa 2012)

Standard of tourism field in South Karelia region can be considered relatively high and well organized and marketed. Improvement of tourism sector is dynamic and powerful. High efforts are put into reach the goal "Saimaa brand".

Chapter 2

Assessment of national institutional and business environment for the particular trans-border cluster: PESTLE analysis

2.1 Russia: PESTLE and SWOT analysis

Political Environment

The governmental political environment in Russia affects the business environment mainly through the legislation and different regulations. The local politics in different cities and administrative districts affects the every day business life more. In local level the businesses get involved with the political decisions while bargaining ground and estate, and while agreeing on capital investments. However, the business can be made more complicated through the bureaucracy that is influenced by the political decisions. The corruption in the customs and other governmental institutions further worsens the business environment in Russia. It seems to be a lot of talk in Russia about wanting to protect the domestic markets from foreign competition and reducing the imports of foreign goods for the benefit of the domestic producers. However, as long as there are only a few competitive firms operating in the same field as the Finnish exporters, and as long as the demand stays as high, this trend is not expected to grow. Still, the Russian political environment has recently tightened: the control of the government seems to intensify.

Current strengths(S)	Current challenges(W)
<ul style="list-style-type: none"> • Continuity in policies • International integration (*Medium) 	<ul style="list-style-type: none"> • Corruption and crime (*High) • Terrorism (*High)
Future prospects(O)	Future risks(T)
<ul style="list-style-type: none"> • Growing international relations (*Medium) 	<ul style="list-style-type: none"> • Pressure from bureaucracy
<p>*Impact on tourism sector in Leningrad region Medium- International integration and growing international relations can bring to optimum terms for access to Russia High- Corruption, crime and high possibility of terrorism makes Russia unsafe for tourists</p>	

Economic Environment

The economic growth in Russia creates a good basis for the enterprises to begin and develop operations in Russia. The economic growth is strong in all districts of Russia, not just Moscow and St. Petersburg. This economic growth is influenced by the tax revenues and raw material exports and it enables the budget investments to other fields. This generates further opportunities for Finnish firms in the means of increased amount of projects by the Russian government. It is predicted that as long as the energy prices increase and as long as Russia has oil, there will be money in Russia. With this money the economic growth is expected to continue positive though there is a possible danger for «dutch disease». The inflation in Russia is rather high but it has been stable during the past few years, thus companies do not expect quick changes in inflation to create problems for them. The problems in customs procedures, the high duties and taxation in general, and the long history of command economy have led the companies in Russia to seek ways to overcome these problems through informal, grey economy. The companies have been forced to hide their profits thus avoiding taxes by paying under the table. The same goes with double-invoicing. Even salaries are often paid black in Russia to avoid the taxes. This is something the Finns often find hard to understand, because there it is easy to see where the tax money is going to, and people commonly agree on paying taxes for common good. In Russia, however, it is not this simple. Finns are amazed by the exceptional ability of the Russians to find solutions to their problems caused by the difficult business environment. The companies operating in Russia have been forced to this flexibility and although the situation is getting better, the companies are still working on the edge and forced to seek even illegal ways to cope in the harsh environment: they would simply not survive without.

Current strengths(S)	Current challenges(W)
<ul style="list-style-type: none"> • Successful economic reforms (*High) • Strong current account surplus 	<ul style="list-style-type: none"> • Unemployment (*Medium) • Dependence on foreign money
Future prospects(O)	Future risks(T)
<ul style="list-style-type: none"> • Comfortable foreign exchange reserves • Growing foreign investments (*High) 	<ul style="list-style-type: none"> • Decreasing budget surplus • Adverse balance of payments
<p>*Impact on tourism sector in Leningrad region Medium - High rate of unemployment brings to decrease of available money High - Growing foreign investments and successful economic reforms bring to economic growth of the country which will also be a strong basis for tourism industry</p>	

Sociocultural Environment

This is one of the most important parts so we will analyse it in detail. The sociocultural environment causes problems especially for the firms that are just beginning their operations in Russia. The operations modes and management culture, in particular, differ greatly from that of the Finnish ones, and if the firm is not aware of these differences and does not manage them, problems occur. Many companies in Finland speak positively about the business style in Moscow and Saint Petersburg: the behaviour is constantly changing towards the western style, further easing the business operations there. At the same time, they predict, however, that Russia will hardly ever be entirely a western country. Many companies tell that the language skills of the Russians have improved, especially among the young companies that hire younger generation.

Three out of five Finnish companies have employees who talk Russian, the others use interpreters. According to them, the company could cope with English as long as the company was doing business on an every day level. The experience of these companies is that most of the assistants and managers in Russia speak English but as a step or two is taken higher, Russian is a must. The general rule thus is that the business is done in Russian. Russians are generally clever negotiators, which often surprised the Finns. The know-how is also generally on a good level. The culture brings along the differences in behavior and ways of negotiating: Russians often present their ideas with polite words avoiding frankness. The sellers are then supposed to be able to get the message from these nicely put sentences. This is then where the language barrier comes up: the negotiation language is Russian, which naturally leads to the Russians having better initial position in the meetings. There is a lot of know-how in Russia. The people are commonly well educated, especially in the biggest cities. The engineering education, especially, is well appreciated in Russia, at least on theoretical level. The problem seems to lie in practical level; the processes of producing high quality products are not managed. Thus although there is know-how in Russia, they still seem to lack skills in practical production and in technology, which is partly explained by the lack of money in the organisations. The obsolete technology in many branches in Russia demands a lot of investments and renovation in the near future, creating further opportunities for the Finnish exporters. The working moral, especially among the young people has increased in Russia: they are working harder and longer days. In today's business life the flow of information no longer plays an important role. The most common channels of communication in business with Russians are Internet and telephone, also fax was still often used. The Russians also value and expect face-to-face meetings, thus they were considered necessary in the trade with Russians. The problem with information flow at the moment seemed to lie in the complexity of the supply chains: the many intermediaries between the end customer and the exporter that may delay, change or even hide the original message.

Current strengths(S)	Current challenges(W)
<ul style="list-style-type: none"> • Improvement in real income and wage levels (*High) • Educated population (*High) 	<ul style="list-style-type: none"> • High AIDS rate (*High) • High mortality rate
Future prospects(O)	Future risks(T)
<ul style="list-style-type: none"> • Revamp of social security benefits • National welfare fund • Tax benefits to healthcare and education (*High) 	<ul style="list-style-type: none"> • Widening income inequality and rising poverty(*High) • Increasing spread of the AIDS epidemic (*High)
<p>*Impact on tourism sector in Leningrad region High- High AIDS rate and the risk for increasing spread of the AIDS epidemic makes Russia less attractive for the tourists High- Improvement in real income and wage levels will increase available money High- Tourism industry is supported by universities that prepare specialists for this sphere. Tax benefits to healthcare and education will bring to more efficient educational system. High- Widening income inequality and rising poverty. The prolonged existence of such conditions is expected to give rise to a social crisis.</p>	

Technological Environment

In information technology, the Russians are partly ahead of the Finns. The young, self-educated people have pushed the IT development on its feet in Russia. At the moment most of the hackers and viruses come from there. However, outside the biggest cities, for example the Internet connections are not so fast and it is rather expensive as well. It could be said that there are a lot of highly skilled people in Russia but that there is also

a lot of non-skilled people there as well. Similarly, there are enterprises with the newest technology and enterprises with machines from the period of the Soviet Union. These differences are mainly found between the cities and the vast rural area. The gap between for example the Moscow and the Siberia is enormous. This applies to all of the different business environments, not only the technological one. The differences in information systems between Finland and Russia delay and hamper the daily deliveries between the countries. Although the harmonisation of the information systems is proceeding in the so called Finruslogict- project, there is still a need for double work load with the documents: the information from, for example, EU- form cannot be electronically transferred to the Russian system.

Current strengths(S)	Current challenges(W)
<ul style="list-style-type: none"> Advanced space technologies 	<ul style="list-style-type: none"> Poor performance on patents Weak science and technology systems (*High)
Future prospects(O)	Future risks(T)
<ul style="list-style-type: none"> Increasing presence of IT sector (*High) Increasing number of skilled workers (*High) Military technologies helping the farming sector 	<ul style="list-style-type: none"> Piracy and poor infrastructure
<p>*Impact on tourism sector in Leningrad region High - Increasing presence of IT sector will raise innovation potential of the country from which tourism sector will surely benefit High – Existence of skilled workers is important for all industries. High – Weak science and technology systems. This is a very serious challenge and the government must quicken his steps in this direction</p>	

Legal Environment

The legislation in Russia is continuously reformed and monitoring of these changes is perceived difficult among the companies. Russian legislation is beginning to be at the same level with the West but problems still occur in local level interpretations that are not in accordance with the actual law. Another problem is the slowness of the implementation: in Russia these sorts of issues tend to take time before they are fully placed. Thus, the legal environment is still considered as a risk in operations in Russia. The big investments, in particular, may fail to be made in the lack of predictability in legislation. The unpredictability of the customs, meaning the sudden decisions of the individual customs officers that do not correspond with the actual legislation, is hindering the exporting process to Russia daily.

Current strengths(S)	Current challenges(W)
<ul style="list-style-type: none"> Conducive FDI policies (*High) Easy immigration policy (*High) 	<ul style="list-style-type: none"> Weak judicial system Unfair competitive practices (*High)
Future prospects(O)	Future risks(T)
<ul style="list-style-type: none"> Judicial reforms International co-operation for legal assistance 	<ul style="list-style-type: none"> Slowdown of structural reforms following economic crisis (*Medium)
<p>*Impact on tourism sector in Leningrad region High - Special economic zones, high-technology parks and special tourist regions are established to encourage foreign investment High – Easy immigration policy brought to high rates of immigration to Russia, which will surely lead to the raise of tourism inbound to the country</p>	

High – Unfair competitive practices slowdown the development of tourism industry
 Medium –The slowdown of structural reforms after the crisis will dissuade investors from entering Russia, hence it will make a big impact on all industries including tourism industry

Ecological Environment

As Russia inherited the land and the society from the Soviet Union, and ecological or ethical issues were simply not considered in the pastera of the Soviet Union, the condition of the nature and the lack of respect to ecological matters is understandable. As the money has been tight, ecological and ethical issues have been forgotten, and the companies and the people have been forced to concentrate on satisfying the basic needs of staying alive. The ecological awareness is just now beginning to develop in Russia. As ecological thinking and the legislation in this field are generalising, the ecological regulations drive the companies to certain solutions that Finnish firms could then offer and sell for them. Thus business opportunities can be seen in the ecological awakening of Russia as well.

Current strengths(S)	Current challenges(W)
<ul style="list-style-type: none"> • Environmental management systems 	<ul style="list-style-type: none"> • Spillages causing environmental hazards • Lack of resources to tackle environmental problems
Future prospects(O)	Future risks(T)
<ul style="list-style-type: none"> • Environmental security system • International co-operation • Increased investment in global environmental facility 	<ul style="list-style-type: none"> • Deteriorating waterquality • Difficulties with environmental monitoring
<p>The ecological awareness is just now beginning to develop in Russia but there are still serious challenges connected with ecological environment. As this is one of the main criteria for tourist to visit a certain country, Russia has to take certain steps in this direction. Hence, we can conclude that the impact of whole ecological environment on tourism industry is <u>High</u></p>	

2.2 Finland: PESTLE analysis

Political Environment

Finland demonstrates political stability. In terms of Finland's foreign and security policy line it is essentially based on the conduct of a consistent foreign policy, ensuring the functioning society and promotion of citizens' security and wellbeing as well as a credible national defense, active role as a Member State of the European Union (EU), and participation in international decision-making and in the work of the United Nations (UN) and other global and regional organizations.

The general goal is to strengthen Finland's security and international influence and to promote the interests of the country, considering the requirements of increasing international cooperation. (Ministry for Foreign Affairs of Finland, 2011)

Finland launched a new national tourism development strategy for 2020 which aims to take advantage of the country's unique position as a neighbor to Russia, its attractive tourism regions, and the diversity of its tourism offerings. Easily reached from anywhere in the world via Helsinki's international airport, Finland is ready to carve out a bigger share of the global tourism industry. The new tourism strategy pinpoints three basic trends in international tourism which Finland will take into account: an increasing demand worldwide for "green" tourism; the growing importance of the Internet in promoting tourism destinations and in serving potential visitors; and new demographics in the global tourism market, particularly an aging yet affluent

population in search of new destinations which nevertheless provide modern services. “Finland’s tourism industry must also recognize new kinds of customer segments and their wishes or requirements – in other words, we must operate in a user and demand oriented manner,” the strategy document explains. (The European Times, 2010)

Russia and Finland actively interact on all levels. Particularly in Tourism and Trade sector: the number of Russian tourists is instantly increasing, economical exchange between countries is growing. Cai-Göran Alexander Stubb considers tourism as one of the most perspective areas of Russian-Finnish interaction. (Fontanka.fi, 3.12.2012).

In 2010 over one million Finnish visas were issued all over the world in total, $\frac{3}{4}$ of them were issued by the General Consulate in Saint Petersburg. To optimize the application process and to make it faster (maximum waiting time 15 minutes) and easier for Russian citizens a new visa center was established in Saint Petersburg and started its work on the 11th of February 2011. Its principal of work is «One-Stop-Shop» when you get all the necessary services in one place. The Ministry for Foreign Affairs of Finland and VFS Global control the visa center activities (General Consulate of Finland in SPb, 21.01.2011).The process for visa application for inhabitants of Saint Petersburg is simplified; two-year visas can be issued as well. All this is an additional stimulation to travel to Finland more often. A very high percentage of people living in Saint Petersburg have valid Finnish visas and spend long weekends and family holidays in Finland.

We can follow up the progress: number of issued visas increased in 2011 – about 970 000 visas in Saint Petersburg,(total in Russia 1.5 million).Since the beginning of 2012 over 910 500 of visa applications were proceeded in the General Consulate in Saint Petersburg. According to the General Consulate predictions by the middle of December 2012 it will be already 1 million visas will be issued. 90% of the visas issued are multiple entry visas. Only 1% of applications were declined. Foreign Minister Erkki Tuomioja said that a new record of issued visas to Russian citizens will be made. In 2012 the growth of the number of Finnish visas issued will be 25%. (fontanka.fi, Nov.2012)

Economic Environment

Nowadays the Finnish economy is going through difficult times because of the crisis that has engulfed the eurozone. Currently Finland is in a recession. Exports are dragging and domestic demand has not been enough to keep the Finnish economy out of the red, show the latest figures from Statistics Finland.

The ongoing euro crisis continues to be a cause for uncertainty and it is causing risk-averse Finnish companies to hold off on making investments.

Last time Finnish economy was in recession in 2008-2009 as a result of global economic crisis. Nordea bank does not believe further deterioration is on the cards. In the bank's view, the worst has passed. (YLE, 5.12.2012)

Tourism is an important part in Finnish economy. Tourism’s share of GDP in 2011 is 2,4% and it has a big potential to grow. In 2011, Finland received 7.3 million foreign visitors 45% of them were from Russia. (Statistics Finland, 13 June 2012). Number of Russian visitors to Finland is froing rapidly year by year. Nearly 80 per cent of the Russian tourists to Finland come from the St. Petersburg area.

Tourists bring money into the country buying services (transport, accommodation, medical tourism food industry, leisure industry etc.) and goods (shopping). Over the past year, Russian tourists spent in Finland 1 billion euros. This year, according to the Union commerce, shopping has increased by 25%, while the

number of overnight stays increased by 20%. Experts point out that the growth of the Finnish retail sales are almost entirely dependent on Russian shopping tourism and 77% of Russians coming to Finland, called the cause of his visit to the country shopping. Experts predict that in the future Russian tourism in Finland will develop. Taking that to the account services are becoming more of Russian orientated to attract Russian tourists. Stores pay a lot of attention these days to attending to the needs of their customers from Russia. At Stockmann department stores, better service for the Russian tourists is regarded as so important that from the beginning of December the store will accept rubles as payment. (HELSINGIN SANOMAT, Oct 2012). Other retail stores situated in border region are planning on accepting rubles as well to keep up with competitiveness.

Sociocultural Environment

It is a stable society, Finland has high level of life, a high standard of education, social security and healthcare, all financed by the state and well-funded pension system, however the country faces problems of unemployment (according to statistics the unemployment rate in October 2012, 6.9 per cent), an ageing population and the length of working careers.

Finnish society is based on hard work, respect for application and entrepreneurship, equality, solidarity and caring for one another. Respect for everyone and openness to diversity are Finnish virtues. Finland's status as a bilingual country is a strength and resource. Various religions and communities are valuable to moral growth. In Finland, everyone is equal irrespective of their gender, age, ethnic origin, language, religion, convictions, opinions, health, disability, sexual orientation, or any other factor. The Government will systematically act against racism and discrimination. (The Finnish Government, 2011)

According to a recent study carried out by the Economist Intelligence Unit, Finland has the world's best education system. The results were based on attendance, university graduation rates and literacy rates. Officials from the EIU also noted that the country produces good teachers and follow moral missions that work to promote education. (Ice news, 6.12.2012)

The Ministry of Education understanding the importance of tourism industry for Finland is supporting its development. Over the past 7 years the number of English-language degree and non-degree programmes in tourism at Finnish universities have multiplied by 10 times. Today 13 institutions of higher education offer 17 programmes orientated on tourism to prepare all kind of specialists. All studies financed by the state for foreign students as well as for Finnish citizens. (Study in Finland, 2012)

Tourism has a big impact on employment. Finland's tourism sector currently employs around 130,500 people either full time or part time. The new strategy of government aims to boost tourism sector employment to 171,000 people by 2020. (The European Times, 2010) This figure includes all full- or part-time jobs. Jobs located in other sectors, but providing services for tourism in particular, are also included.

Today Finland offers genuine hospitality and very experienced meetings industry professionals and other service providers. Finns are good organizers. The safety and security of Finnish host cities considered to be either good or very good. Finland is one of the safest countries in the world which is a very important factor for tourists when choosing destination.

Technological Environment

High educational standards have contributed to Finland's emergence as a country of high technology. Finland is well known for its mobile phones and boasts more internet connections per capita than any other country. Finland is today a world leader in various high-tech fields, and this expertise benefits society as a whole. (FCB, 2012)

Finland's national innovation system comprises the producers and users of new information and knowledge and the various ways in which they interact. As the Finnish Science and Technology Information Service points out, "At the core of Finland's innovation system are education, research and product development, and knowledge intensive business and industry. Varied international cooperation is a feature running through the system. "Renewable energy and clean technologies are sectors which have been targeted for significant development. Given Finland's proven expertise in the energy sector and its commitment to innovation, research and development, and new technologies, the country seems well placed to achieve success in these new fields. (The European Times, 2010)

90% of Finnish citizens in the age 16 - 74 years old are the Internet users. Half of Finnish population are users of internet social networks. Finns actively use the Internet for on-line purchasing. Among the most popular internet orders are different kinds of tourism services.

Possibility of booking hotels, tickets and ordering other services on-line contribute a lot to the T & T industry development.

Legal Environment

Finland is on the top of the list among the world's least-corrupt countries.

1	Country Rank	Country / Territory	CPI 2012 Score	Surveys Used	Standard Error	90% Confidence interval		Score range
						Lower	Upper	
2	1	Denmark	90	7	2.0	87	93	83
3	1	Finland	90	7	3.0	85	95	83
4	1	New Zealand	90	7	2.2	87	94	83
5	4	Sweden	88	7	1.9	85	91	82
6	5	Singapore	87	9	2.1	83	90	79
7	6	Switzerland	86	6	2.6	81	90	73
8	7	Australia	85	8	1.1	83	86	80
9	7	Norway	85	7	1.6	82	87	78
10	9	Canada	84	7	2.2	80	87	74
11	10	Netherlands	84	7	2.0	81	88	73

(YLE, 5.12.2012)

The word of law is followed by everyone and everything is done according to it, you can rest assured that matters will be handled fluently and efficiently.

When people are traveling it's very important for them to know that everything will be well-organized, smooth and their rights are protected by the law.

Ecological Environment

According to the latest survey conducted by American ecologists Finland is on the 3rd place in the world by level of Environmental protection.

Environmental policy of Finnish Government is: a clean environment, biodiversity, and high-quality living environments are the prerequisites of wellbeing. Global environmental challenges, including the sixth wave of extinction and the mitigation of climate change, pose challenges that Finland must meet. The objective of the environmental policy is to improve the condition of the environment and bodies of water, halt the degradation of biodiversity, prevent environmental pollution and ensure the effectiveness and fairness of climate change mitigation measures.

The Government's goal is to develop Finland into a carbon-neutral society and a forerunner in environmental expertise, clean technology, and sustainable natural resource policy. To make the future Finland a carbon-neutral society, to propel Finland to a leading position in environmental technology, and to develop the nation into the most environmentally conscious society in the world. (FCB, 2012)

Finnish emphasis on nature makes Finland stand out from other European countries. Finland is committed to "green", sustainable tourism and the country's unspoiled nature is one of its strong points. Nature is an integral part of the Finnish way of life. It is a big attraction for tourists when choosing destination. Many inhabitants of Saint Petersburg prefer to spend their holidays in a cottage house in a forest near clear lake in Finland, where they and their children can swim, breathe clean air, and drink clean ground water directly from the tap rather than to do the same in their our country.

Chapter 3

Factor analysis: opportunities and constraints for the particular trans-border cluster to grow

Finnish-Russian cooperation has a great potential but there are still a lot of problems that must be solved. Below we named the main points as opportunities and constraints for a particular trans-border tourism cluster to grow.

Opportunities :

- The labor relations in Russia are strongly regulated
- Russia has an enormous potential market (only over 13 million citizens in North-West Russia)
- Cheap workforce and other cheap resources
- Russia is a very attractive country for tourists of every preferences as it has rich natural, historic and cultural resources
- Well-developed infrastructures of supporting and related industries
- High purchasing power of foreign currencies
- Finnish companies have access to the European financial resources as a participant of EU
- Well-established friendly relations between Finland and Russia
- Geographical proximity

- *In the South-East of Finland large stores have claimed they will accept Rubles as payments since December 2012
- Internet as a common marketing channel
- Know-how cooperation between companies inside tourism cluster
- Labor movement between companies operating in tourism sector
- Language skills development, cooperation between universities, companies operating in tourism field, municipalities etc...
- Finland is mostly known as a winter-holiday place, or as a short-term one-day break place. There is a huge capacity to develop Finland and South-East area also known as a summer holiday target and a good place to visit longer (a week or two)
- Visa-regulations; plans for the future to abandon the strict regulations between Finland and Russia
- Cultural differences between Finland and Russia attract tourists. National holidays, manners, nature, everything “new” and different.
- Education in universities in Tourism sector and cooperation between universities between countries. A possibility to train future planners and experts for the field

Constraints:

- Despite high rate of literacy in Russia, the universities do not prepare specialists fully adapted for the market yet
- Differences in Russian and Finnish legislation, soft power of Russian legislation (it is possible to use gaps in the laws or even use bribes at all levels –meet with tax or legal authorities, etc.)
- More strict legislations on foreign companies in Russia
- Overloaded border-crossing points
- Unfair competitive practices in Russia
- Restricted access to financial and credit resources
- Fewer tax benefits for sectors with low-profit rates, that is tourism
- High country risk of Russia. The most crucial risk is the risk connected with currency exchange – rubles are not freely convertible as euro*.
- Different stereotypes of doing business
- Finland as a participant country of EU sometimes has to act in the sphere of EU's policy
- Language barrier
- Global economic situation
- Recession in tourism sector
- Lack of know-how inside companies operating in tourism field
- Different kind of marketing strategies between countries and companies; how to reach foreign customers in a cost-effective way
- Differences between demand and supply
- Different kind of style to lead companies and projects between countries. Style of leadership.

One of the most important points for a particular trans-border cluster to grow are the relations between Finnish and Russian companies and their understandings about each other and about cooperation. Here we can see that they are quite different.

Views of Finnish and Russian companies on cooperation

	Finnish companies	Russian companies
Motives	Market potential	Access to resources and

		know-how
Partner criteria	Company performance	Company reputation and personal relationships
Barriers	Lack of resources	Access to information, Language
Problems between Partners	No major problems	Different mindsets
Problems of Russian business environment	Legislation, administrative Control	Lack of financing, rising operation costs, corruption

Most Finnish companies are interested in Russia due to its market potential, and lower production costs seems to be of secondary importance. Russian companies seek financial resources, new technologies and know-how from the cooperation. As the banking system is underdeveloped in Russia, obtaining funding is very critical problem for Russian companies, and it becomes almost impossible for a firm to obtain the necessary amount for carrying out a business project. Finnish companies put more attention on such criteria as company's reputation, technical knowledge and ways of conducting business when they are selecting a partner. What about Russian companies, they give more importance to company's reputation and technology when finding partners, because of previous negative experiences. However, they also stress "soft" criteria, such as long-term commitment and mutual trust, which is thought would help avoid the problems in cooperation. Finnish companies also want the Russian company to have directors that have a similar mind-set to their own and similar views on doing business. The main barriers to cooperation are the lack of time and other resources for Finnish companies (especially SMEs) and difficulties in finding information on potential partners due to e.g. language barrier for Russian companies.

One of the opportunities is 3 day visa-free regime for Finnish tourists. In accordance to the legislation of Russian Federation (RF Government Resolution №397), foreign tourists and persons without citizenship travelling on ferries may arrive to the port of St. Petersburg without Russian visa and stay in Russia not more than 72 h. VISA-Free journey can last up to 3 days.

Chapter 4

Creation and analysis of the cluster map

Russian Tour Operators and Travel Agents: Russian tour operators are relatively new players – most were formed fewer than 15 years ago. Global players in the travel industry are eyeing the Russian market opportunity. In 2009, TUI purchased VCO Travel, the second largest tour operator. The market remains very fragmented with a large number of very small companies. Over 70% of all tour companies are small and medium-size enterprises. Intourist, once the official state travel agency of the Soviet Union, is now Russia's largest tourism agency. Other leading tour operators include Russkiy Express, Lanta Tour Voyage, Coral Travel, UzniyKrest, KMP Group and Natali Tours. Competition is intensifying as second tier tour operators that have survived the financial crisis seek to capitalize during the recovery. The largest flight retailers are: S7 Tour, Intourist, Capital Tour and Transaero Tours Centre. Most of the biggest tour operators in Russia work with Aeroflot and Transaero airlines. Some tour operators, such as "S7 Tour", have their own internal airline services. The biggest tour operators tend to focus on mass tourism and are less specialised in tailor-made tours that are favoured by the consumers in the higher end of the market.

Inbound and outbound statistics of Russia: Today Russia, with 140 million inhabitants, provides a huge potential market for the Finnish tourist trade. In the St Petersburg region alone, which lies near the Finnish border area, there are about 4.6 million inhabitants. This is almost equivalent to the entire Finnish population. Because of this, Russians are nowadays an important part of the Finnish tourist trade. According to the Bank of Finland (2010), in 2009 the proportion of Russian tourists contributing to Finland's two-billion-euro international tourist industry was 31 per cent. The meaning of Russian tourists has increased significantly in the Karelia region in particular: for example, whereas in 2004 Russian tourists spent 12 million euros in Imatra and 70 million in Lappeenranta, in 2010 they spent 62.5 million euros and 196.7 million in these two cities respectively. Also, the structure of consumption has changed: in 2004 the proportion of services was 9.8 per cent, whereas in 2010 the proportion had risen to 19.2 per cent. Further, the latest news lends support to the finding that Russian tourists spent more money than other international tourists. For example, University of Eastern Finland (2011), Russian tourists spent 101 euros per day, whereas tourists from Finland and other EU countries at the same time spent 88–94 euros per day in the Savonlinna region, which is adjacent to Karelia. And this is the main reason why large stores in South Karelia have claimed they will accept Rubles as payments since December 2012.

Table 1: Arrivals of foreign tourists to Russia in the 1st half of 2012(thousands of arrivals)

№	Country	2012	2011	2010	2009	2008
1	Germany	143,7	117,4	123,4	113,0	127,3
2	China	112,8	78,8	52,0	29,7	43,7
3	USA	63,5	52,3	46,0	60,0	67,5
4	France	51,5	42,9	42,5	46,3	48,2
5	Finland	51,3	57,2	54,4	67,1	67,2
6	Great Britain	50,8	41,0	42,2	55,2	53,3
7	Italy	47,7	42,3	40,9	47,4	51,8
8	Turkey	46,6	31,9	23,5	17,3	25,8
9	Israel	34,0	27,4	21,0	15,3	12,7
10	Spain	23,0	24,9	22,0	30,3	26,1

As we can see in Table 1 Finland is in the 5th place with tourist arrivals to Russia. From 2008 the number of tourists from Finland visiting Russia declined. Just the opposite situation is in case of travel outbounds. Though Finland is not a leader country with number of Russian tourist arrivals, however, the number of Russian tourists visiting Finland grows rapidly (Table 2). So we can say that as number of Russian tourists visiting Finland is more than number of Finnish tourists visiting Russia, and this trend continues up from 2008, so we think that it will be more efficient to take Russian large tourism company as a «core» for a particular tourism cluster.

Table 2: Russian tourists traveling abroad in the first half of 2012(thousands of trips)

№	Country	2012	2011	2010	2009	2008
1	Turkey	936,4	1132,7	923,6	642,8	789,2
2	Egypt	803,9	488,6	1140,6	689,8	749,7
3	China	572,7	631,8	563,5	390,3	957,6
4	Thailand	458,5	421,2	225,3	103,1	173,0
5	Germany	334,6	324,4	213,2	160,8	149,8
6	Spain	291,7	237,3	155,0	113,4	135,2
7	United Arab Emirates	265,3	188,0	140,6	100,8	133,3
8	Italy	265,0	262,0	194,6	144,0	179,4
9	Finland	245,2	416,4	310,1	285,4	342,7
10	Greece	203,7	201,0	114,5	81,4	99,6

Generally the supply chain consists of the suppliers of all the products and services that go into the delivery of products/services to customers. Tourism supply chains involve many components, not just accommodation, transport and excursions, but also for example restaurants, handicrafts, waste disposal and the infrastructure that supports tourism at the destinations. Successful supply chain relationships between different enterprises and other actors consolidate the common view about goals. Also, the policy and management systems of the local authority have to support goal achievement.

Analyses of tourism cluster map

CLUSTER UNITS	CURRENT RESOURCES& PROSPECTS
<p>Tour agencies and travel operators</p>	<p>Currently, there are about 200 tourism companies in the Leningrad Region and over 40,000 people are employed in serving the needs of visitors. Only 14 tour operators in Leningrad region (incl. Saint Petersburg) that implement domestic, international inbound and outbound tourism. The biggest companies among them are : “LLC S-Continental”, ”LLC Scandinavia”, “LLC Oniks”, “LLC Delovie Linii” , “LLC Viipuritours”, “LLC Artvyborg travel” and “LLC Laguna-travel”. There are currently 220 tour agencies (as core business) in Leningrad region and 4504 tour agencies in Saint Petersburg.</p> <p>There are several travel agencies and tour operators operating in South Karelia region. For example “Matka-Miettinen” in Imatra and SaimaanMatkaverkko in Lappeenranta.</p>
<p>Supporting institutions</p>	
<ul style="list-style-type: none"> • South Karelia Municipality • Leningrad Region government 	<p>There are certain projects connected with the development of Finnish-Russian tourism:</p> <ul style="list-style-type: none"> ➤ <u>Tourist Information Centres Network creation in Leningrad Oblast and South-East Finland</u> <p>Objectives of the Project: 1. Establishing the Network of Tourist Information Centers in Leningrad Oblast acting as an infrastructural facilities for sustainable development of tourist sector of economy. 2.Development and implementing the innovative system for statistical accounting of tourist sector3. Establishing the common information system of TICs in Leningrad Oblast and Finland.4.Promotion of the region.</p> <ul style="list-style-type: none"> ➤ <u>From Saimaa to Onega(development of water tourism),</u>
<ul style="list-style-type: none"> • GoSaimaa(Finland) 	<p>GoSaimaa is a regional operator supporting, marketing and organizing Travel and Tourism industry and companies in South Karelia area. It brings together Accomodation services, Catering services, Free time activities and meeting and conference possibilities.</p>
<ul style="list-style-type: none"> • MEK(Finland) • Federal Agency for Tourism(Russia) 	<p>MEK Is a Finnish leading main national operator in T & T industry supporting, marketing, managing and improving the whole industry.</p> <p>The principal aims of Federal agency are: providing the state control of the activities in the tourism sphere; legal regulation in this field; promoting the tourist product on domestic and international markets; establishing favorable conditions for the development of the tourist infrastructure and for increasing the quality of tourist services; international cooperation in the tourism sphere.</p>
<ul style="list-style-type: none"> • Finland's government • Russia's government 	<p>Finland’s government is supporting T & T industry through programs and campaigns in cooperation with MEK, Finagora and main ecoromical organizations.Main goal is to boost Finland-brand and to reach more</p>

	<p>foreign tourists into Northern Europe.</p> <p>The Russian government has launched a goal-oriented federal programme in order to boost Russia's domestic and inbound tourism flows. This programme will be funded by from federal and regional budgets as well as private investment. Funds will be spent on improving travel and tourism infrastructure and promotional campaigns. This year, the federal budget is allocating 2.5 billion rubles to developing tourism in six regions. More than 300 billion rubles will be spent on infrastructure projects over the next seven years.</p>
<ul style="list-style-type: none"> • Academic institutions 	<p>Saimaa University of Applied Sciences offers 20 degree programmes. Four of them are being conducted entirely in English. Total number of students is 2700. Two faculties are located in Imatra and Lappeenranta. Saimia works in international co-operation with other Universities located on Western Europe, Nordic countries, Russia and the new EU member states, and China and Malaysia in Asia.</p> <p>Lappeenranta University of Technology (LUT) conducts scientific research and provides academic education. It combines two fields of science technology and business. LUT is focused on energy efficiency and the energy market, strategic management of business and technology, scientific computing and modelling of industrial processes and expertise in Russian business.</p> <p>Saint Petersburg State University of Service and Economics (SUSE), founded in 1969, is one of the largest universities in Saint Petersburg and in the North-West region of Russia. Its reputation for quality is based on excellence in teaching, research and services to society. Today more than 25,000 students study at SPbSUSE under the guidance of 1100 faculty members. By decision of the Government of the Russian Federation SPbSUSE was chosen as the head Russian university for providing secondary vocational and higher education in the spheres of tourism and hospitality business. The Federal Resource Centre for tourism and hospitality industry is being created at the University.</p>
Main Manufacturers	
<ul style="list-style-type: none"> • Transportation & communication services 	<p>Connections between South Karelia cities Imatra and Lappeenranta are good; it's easy to travel by bus, by car or by train. Also connections Between these two countries are well organized. It's possible to cross the bordes by train, by boat via Saimaa Canal, or by car.</p> <p>The public transport network in St. Petersburg is well laid out and comprises metro trains, buses, trams and also electric trolleybuses. Those choosing to travel on trams around central St. Petersburg will immediately notice that they are a more relaxed and considerably slower way to travel in the city, often proving to be ideal for sightseeing and reaching local attractions.</p>
<ul style="list-style-type: none"> • Accomodation Services 	<p>There are several accommodation services to choose for the tourists in South Karelia area. Hotels, villas, summerhouses, cottages, camping areas. Available possibilities are for any budget.</p> <p>Accommodations are avaiable for any budget. Some hotels, like the Vyborg hotel in Vyborg city, comply with the international standards. 60 percent of recreation institutions have their own catering facilities, and 49 percent have sports facilities. 73 percent of the accommodation places have hot water, showers, and telephones. In the height of the season, vacancy rates vary from 50 to 95 percent. The yearly average is 30 percent. Among many international transport operators in Saint Petersburg</p>

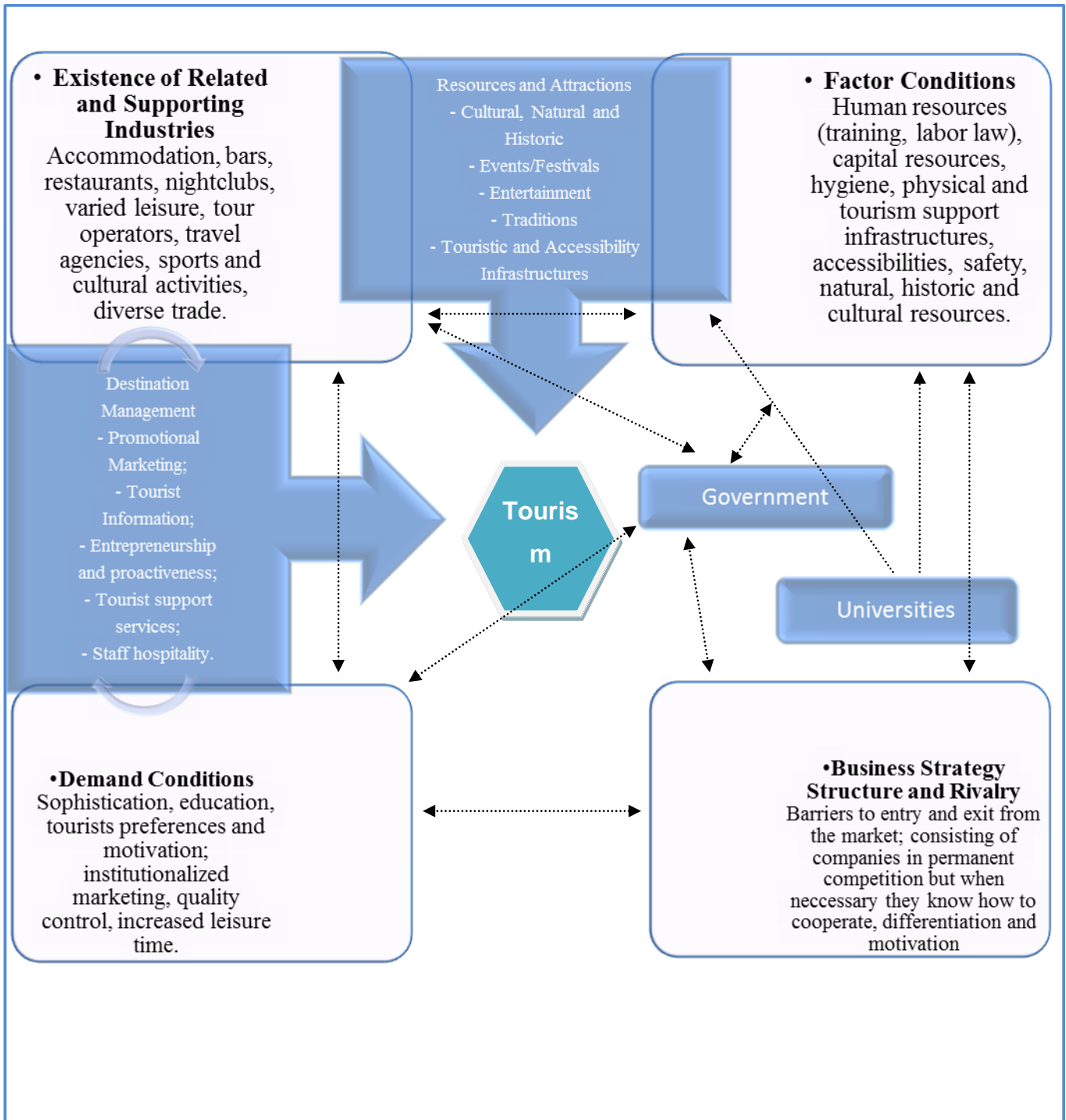
	market, we can name the most successful ones: Sokol Hotel, Courtyard by Marriott, W(Starwood), Domina Hotel Group , Holiday Inn, Crown Plaza, Four Seasons and Reval Hotel.
• Catering Services	<p>Catering services are not so wide but for any budget and comparatively high quality.</p> <p>Currently, there are 22 restaurants and 615 cafes, pizzerias, bars, and wine bars in the Leningrad Region</p>
• Leisure and Entertainment Services	<p>Via GoSaimaa it's possible to find many activities related to exploring the culture and nature all year round. There are several entrepreneurs that offer different kind of activities for tourists; both daily visitors and for longer stay tourists.</p> <p>There are more than 3,900 historical and cultural monuments in the region. Half of those are architectural monuments. These include:700 archaeological monuments;100 art monuments; 29 museums, five of which are federal.Saint Petersburg gives a wide range of leisure and entertainment services and future prospects in this direction are quite optimistic.</p>
• Recreation and health institutions	<p>There are Imatra Spa and Holiday Club Saimaa offering recreation and wellness for tourists, as well as Spa of Lappeenranta.</p> <p>Most of recreation institutions in Leningrad region comply with the international standards. Leningrad region (and Russia itself) is well-known for its high qualified doctors and very well equipped hospitals and other health institutions. But russian tourists prefer Finnish recreation and health institutions as they provide high quality of service.</p>
Supporting fields	
• ICT	<p>There are strong education system in a field of ICT in South Karelia area; thanks to Saimaa UAS and LUT. Strong basis of education creates professionals that are ready to put their efforts for a tourism sector and improvement of the whole field as supporters.</p> <p>Information and communication technology (ICT) sector is one of the most rapidly growing sectors of the Russian economy. 60% of all Russian IT companies are based in St. Petersburg, including 49 centers of leading international and Russian ICT companies.Today, ICT cluster is one of the youngest and most competitive sectors of innovation policy implemented in St. Petersburg.</p>
• Retail trade	<p>Retail trade is a very important supporting field for T & T industry. In South Karelian region there are several possibilities to improve area's shopping possibilities together with a tourism sector. Good basement exists but some international brands and chains are still a lack of the competitiveness.</p> <p>St. Petersburg can be considered one of the most fast-moving regions of Russia in terms of retail growth. The sector forms approximately 24% of St. Petersburg GRP. In 2009 there were 15,6 thousand retail trade outlets active in the city. It grows every year and it seems to keep growing for the next few years.</p>
Main vision / focus	
• Increase tourism	Tourism is one of the largest growing field and economy in a worldwide scene. Increasing tourism of the area creates positive impacts for several fields and actors.
• Growing Economy	Tourists bring money and well-being for the target area which helps the area to grow itself its own economy and well-being. Dynamism and

	creativity keeps the field alive and gives a possibility to improve positive way the whole community and cluster; without forgetting entrepreneurs and their livelihood inside the cluster.
<ul style="list-style-type: none"> • Creating tourism brand 	South Karelian tourism strategy says one of its main goals is creating a Saimaa brand. The same is for Leningrad region. When attracting foreign, or domestic, tourists; brand and imagination of the whole “package” is very important for the marketing. And to become a brand needs lots of efforts and commitments for the companies inside cluster. Brand needs to be earned and it needs a lot of cooperation between entrepreneurs inside cluster.
<ul style="list-style-type: none"> • Cooperation between Finland & Russian tourism 	Increasing cooperation between Finnish and Russian companies operating in tourism industry is a key point of creating an attractive and vital cluster for the future.
Concentration	
<ul style="list-style-type: none"> • Closeness 	Closeness of the cities inside the cluster is one of the most positive points for creating a well operating network. It’s definitely something worth to exploit and needs to be improved.
<ul style="list-style-type: none"> • Nature 	Both countries have their unique nature and possibilities to use natural resources for the tourism industry. Nature is one of the main attraction points in the future tourism as well, so definitely something worth to concentrate on.
<ul style="list-style-type: none"> • Short term visits 	Shopping tourism has been a popular way of tourism for many years in this area and needs to improve in future as well. New foreign entrepreneurs should be attracted in to the cluster to make it vital. Especially in those specific sectors where tourists see deficiency.
<ul style="list-style-type: none"> • Seasonal holidays 	Seasonal holidays and day offs should be exploit well in the future, too.

Chapter 5

Cluster diamond model

Taking into consideration all factors, objects and subjects connected with tourism industry we came to a conclusion that our cluster diamond model for the tourism industry will look like this:



Conclusions

There is interest in developing tourism business sector from both sides -Russian and Finnish border regions. Karelia has willingness to develop as a beautiful nature destination. One of its main strengths is unique location, nature environment and proximity of Russia and Finland. On the other hand outside of this particular cluster area main weakness is accessibility. Also high prices in Finland and a lack of cooperation coordination, language barriers limitation in the regions can be seen as a weakness.

Administration could be one of the development proposals. South Karelia's strategy gives suggestions to the importance of developing cross-border education, business advisory services and cooperation between the Finnish and Russian labour force authorities.

One of the main strengths of this area is the unique Saimaa canal, which connects Lake Saimaa with the Gulf of Finland. Canal cruises are very popular with Russian tourists. At present, Russian visas are not required for simply passing through the canal, but a passport is needed and it is checked at the border. One of the suggestions is the development of Russian-Finnish tourism in this direction.

One of the main goals is to find new networks between local Finnish Russian actors and develop cooperation. Increasing cooperation means finding common views and ways to find marketing and sales channels together, as well as education cooperation, learning and taking into account cross-cultural differences, and tourist's preferences. To create the prerequisites for the development, growth and competitiveness of year-round tourism and the related business operations. It is also important to develop cooperation between the Finnish and Russian labour force authorities.

It is important to develop land use, town planning and road networks between Finland and Russia. In this way it should be possible to increase Russian investment in North Karelia. One advancement concerning the infrastructure is the rapid rail link between Helsinki and St Petersburg opened in January 2011. This rapid rail link is improving Finland's image as an attractive destination for Russian travellers.

Retail trade is a very important supporting field for T & T industry. In South Karelian region there are several possibilities to improve area's shopping possibilities together with a tourism sector. Good basement exists but some international brands and chains are still a lack of the competitiveness.

Visa-free regime would be a big step to extend for the future tourism improvement. Also infrastructure between the countries must be developed; concerning road networking and town planning. New border-crossing points must be built and express border-crossing solutions must be found.

A good base exists but a lot still needs to be done for the future development. This means that both countries need to find out the ways to improve together this particular sector and for entrepreneurs and operators it means finding other companies to create new cooperation and future development. Clusters have proven to be a successful way not only to create strong basis but also to develop something new.

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FINNISH-RUSSIAN TRANS-BORDER FOREST CLUSTER SURVEY

Ahmed Ibrahim, Olga Finapetova (Finnish part)

Inga Polikarpovich, Arina Markova, Dzhakhongir Mirzakhmedov (Russian part)

1 Introduction

To enhance the cooperation between Finland – Russia, remove trade and investment barriers, promote links between companies and developing the climate for business, requires seeing the opportunities through a cluster way of thinking which location-based complementarities are realized.

In today's world companies build its competition and strategy dominated by what goes on inside the organization only, with a slightly less Governmental influence over competition to global forces, the importance of location seems like losing some of its importance.

Cluster way of thinking suggests that a good deal of competitive advantage in fact lies outside companies and even outside their industries, residing instead in the locations at which their business units are based. This creates important new agendas for management that rarely are recognized.

Forest industry, and the industries related are very important for the Finnish economy, One fifth of Finland's export revenue is derived from the forest industries. The know-how and technology related after many years of research and development, with 338,100 km² and 65% covered by forest make Finland one of the top players in this field worldwide.

On the Finnish eastern border is the Russian federation one of the BRICS countries (Brazil, Russia, India and China) which considered to be demographically and economically ranking among the world's largest and most influential economies in the 21st century

Russia with 17,080,000 km², 44.7% (State of the World's Forests 2011, <http://www.fao.org/docrep/013/i2000e/i2000e.pdf>) covered by forest, population of 141,930,000 can show that potential of growth in the forest industry.

Research object

The object of the project is to raise the awareness of cluster way of thinking as an approach for more cooperation across the border between Finland and Russia in forest industry.

Limitations of the research

Although this research on going and carefully prepared, we can still be aware of its limitations and shortcomings. First of all, the research is covering a subject new to some of students involved in the research. Second, the Cluster as a phenomenon is not new, it has attracted many researches, but there is no solid theory to describe it.

Third, to promote the cluster as a way of thinking it involves different parties to it for example: public-private organizations policy-making organizations at different levels, doing this is really challenging. Fourth, Time limits & communication problem, the project to be done during 13 weeks, 1 face to face meeting was not enough, with only online communication which is being done bilateral, so we lack out of brain storming sessions which can enrich the research and help amend and develop the ideas.

1. National Competitiveness

A nation’s prosperity depends on its competitiveness, which is based on the productivity with which it produces goods and services. Competitiveness is rooted in a nation’s microeconomic fundamentals—the sophistication of company operations and strategies and the quality of the microeconomic business environment in which companies compete. (by Institute for Strategy and Competitiveness). Diamond model by Michael E. Porter who is known as the father of modern strategy will be used to help understanding the competitive position of both Finland and Russia

1.1. Finnish diamond model by M. Porter

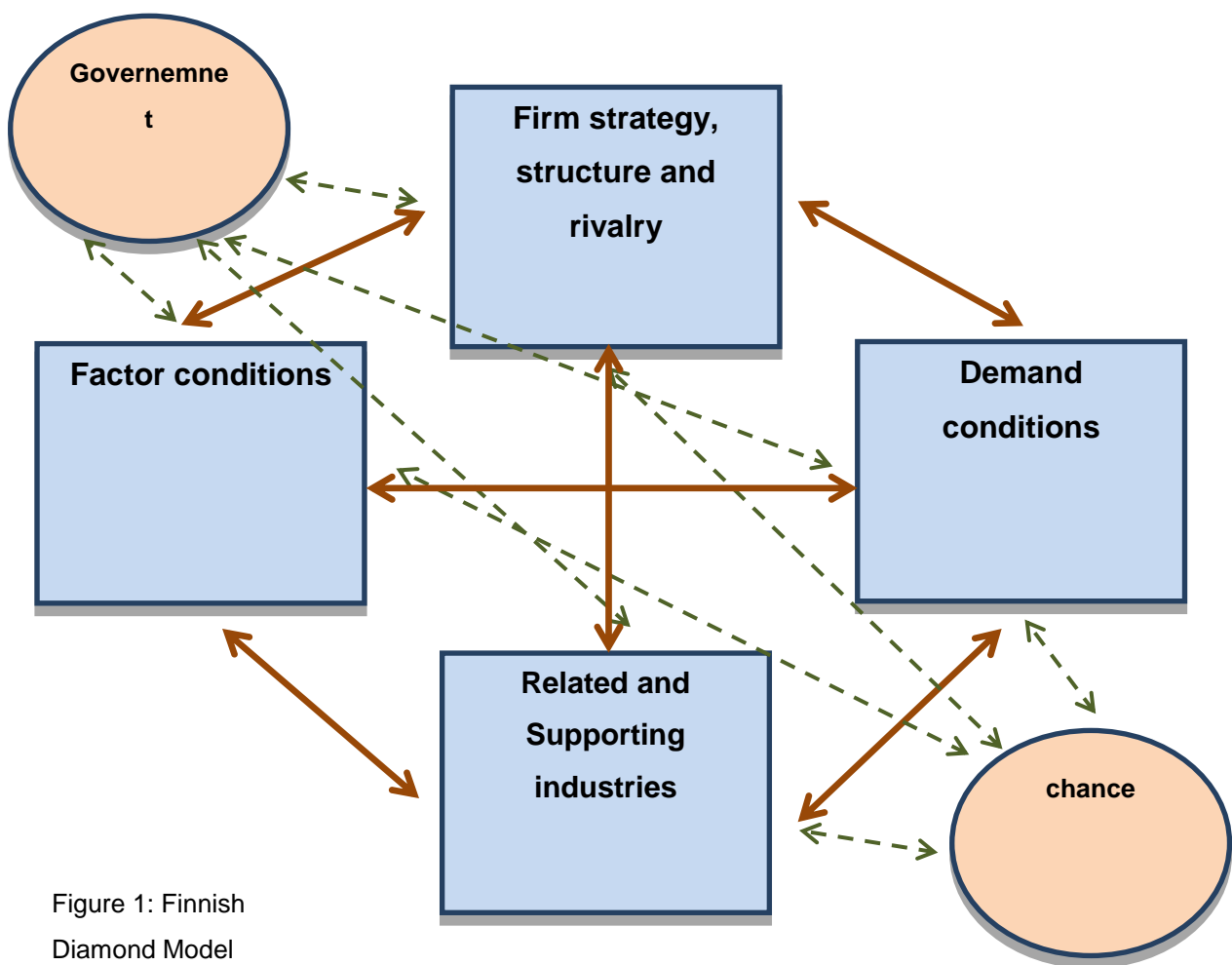
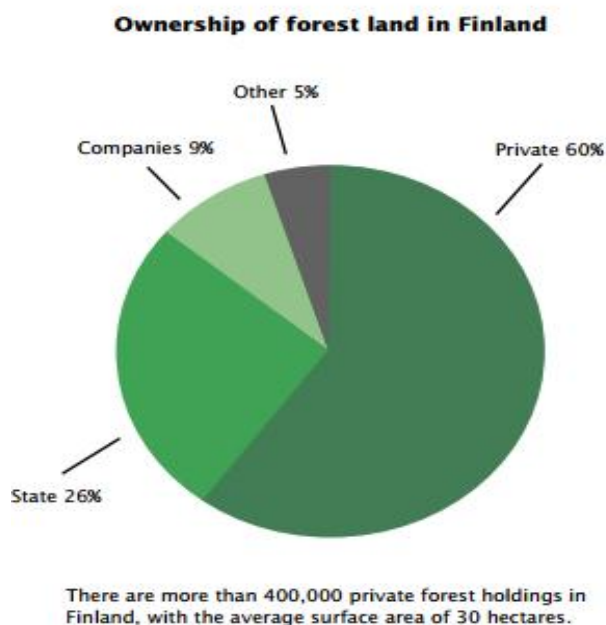


Figure 1: Finnish Diamond Model

1.1.1 Factor Conditions

Factor conditions are considered to be human, physical, knowledge, capital resources and infrastructure resources. Finland has long traditions in education and training in the forest sector, both at the university level and in the training of forest professionals. There is also demand for Finnish forest-related education and training outside Finland. There is already superiority in the human capital but still it can be further fine-tuned by investing in university education and by clarifying the missions of the various educational and research units.

Although Finnish national debts reached total of EUR 91.9 billion at the end of Jun 2012, but it's risk rankings during the same month is in the Green safe zone – AAA, allow it to be ready and supportive for long term investments projects and also in infrastructure and roads for example. The forest itself is owned by private families own two-thirds of the country's forests and the remaining one-third is divided among the state, municipalities and companies, About 920 000 Finns own forest - either directly or through their families. There are over 300 000 small-scale forest holdings in Finland with the average size of about 30 hectares (from Finnish Minister of agriculture and forestry). Earlier, private forest owners were primarily farmers. Today, the majority of forest owners are wage and salary earners, pensioners and business entrepreneurs, with farmers accounting for one fifth. There is a limitation of forest usage, which is forest protection area which is mainly in the north of the country. Following picture by Finnish Minister of agriculture and forestry:



Finnish industry uses 60 million cubic meters of Finnish wood a year, and buyers feel that Finland could afford to increase felling by 10-15 million cubic meters. However, owners of Finnish forest land are less

Production and exports in the pulp and paper industry (1000 tons); percentage changes from previous year by The Finnish Forest Research Institute

eager than before to sell their trees, as increased prosperity means that there is less need to sell trees to maintain a standard of living.

To keep the Finnish factories running there are a real need to import timber, at the moment Russian timber is the main source.

1.1.2 Demand conditions

Finland's domestic market with its relatively small population of around 6 million people makes forest industry easily cover domestic demand

and put a pressure to export the rest.

Demanding customers in Finland have always placed greater pressure on firms to constantly improve offerings. The desired effect is that of increased competitiveness via innovative products. Overall, buyer sophistication and customer orientation is remarkable in recent statistics. Per capita income is higher than the EU average and unemployment is relatively low. The country enjoys dynamic household consumption, thanks to healthy employment levels and dynamics savings.

	Production			Exports		
	2009	2010	2011	2009	2010	2011
Chemical pulp	5 518 -23	7 000 27	7 200 3	1 370 -34	2 100 50	2 100 0
Paper	8 096 -21	9 100 12	9 600 5	7 435 -20	8 300 12	8 800 6
Paperboard	2 506 -13	3 000 20	3 100 3	2 253 -13	2 700 20	2 800 4

1.1.3 Firm strategy

It can be explained as what national-level conditions that determine the creation, organization and management of companies and the nature of national level competition. Intense and positive rivalry between firms in a country or region prepares firms for global competition and helps create a business climate attractive for foreign and domestic investment. A competitive, transparent policy climate with clear “rules of the game” is most conducive to promoting the higher levels of competitiveness that drive innovation.

In the environmental policy arena, these conditions include user fees that reflect full social costs for natural resource inputs and evenly and effectively enforced regulatory structures.

According to the 2006 Transparency International Corruption Perceptions Index Finland Ranks as number one in the whole world with Denmark and new-Zealand, This is one of positive elements.

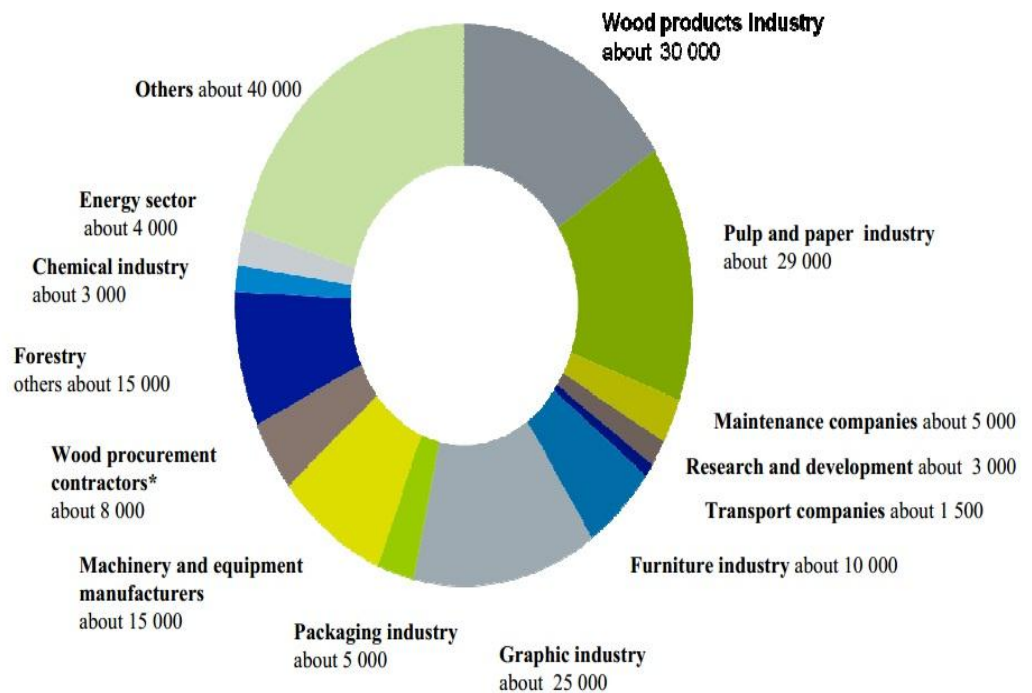
1.1.4 Related and supporting industries

The forest industry is relatively depends on other supportive industries, like logistics, Maintenance Services, chemical industry ...etc

Finland has a modern infrastructure and being renovated and improved all the time, this reflects on the effective logistic system for example.

The number of workers below reflects its importance and effects and strength which lead to the current result in the overall performance of the forest industry strong position in Finland.

Number of workers in each supportive industry
*SOURCE: Finnish Forest Industries Federation. * roundwood harvesting and transportation*



1.1.5 Government

As explained previously most of the forest in Finland owned by private sector, the private sector to plant trees is to generate financial benefits from their investment (although non-market factors can be important in some cases).

Governments support forest plantation development either directly, through planting by state forestry companies, or indirectly, by providing, grants, subsidies or other incentives for the private sector to plant trees. Their motivations for supporting forest plantation development tend to be different to those of the private sector in that they often incorporate non-financial considerations into their decisions.

Governments also support forest plantation development to generate social and environmental benefits. Indeed, such objectives are often stated as the main reason for government support in this area.

The creation of employment opportunities, particularly in rural areas, is one important social reason that is often given to justify government support for forest plantation development. In Finland, forest plantation development is encouraged to remove agricultural land from production (an objective that can be supported on economic, social and environmental grounds).

1.2. Russian diamond model by M. Porter

Forests are recognized as the most considerable of Russia's natural riches and, unlike other natural resources, they can largely facilitate national economic prosperity and the well-being of the population. Russia accounts for about a quarter of the global forest coverage. According to FAO (State of the World's Forests 2011, <http://www.fao.org/docrep/013/i2000e/i2000e.pdf>), the largest owners of the forest areas are Russia (22 %), Brazil (14 %), Canada (6 %), the USA (6 %), and China (4%). The total area of forests in the Russian Federation is 1173.4 million ha, and the reserves of standing wood exceed 82 billion cubic meters. The annual increase of wood in Russian forests is 932.2 million cubic meters with an allowable cut of 520 million cubic meters, of which only 22% are currently used. Thus, the potential of the national timber industry is no less than that of the oil, iron and steel industries (Russia forestry review #3, 2008, http://www.russianforestryreview.com/files/docs/RFR_3.pdf).

Russia's ratification of the World Trade Organization (WTO) accession agreement on July 21, 2012, improves corporate access to the Russian market. According to statement of the Finnish Forest Industries Federation (FFIF), membership will lead to lower export duties on Russian raw timber and reduced import duties will improve the position of Finnish forest industry products on the Russian market (Russia forestry review #4, 2011, http://www.russianforestryreview.ru/files/docs/rfr4_promo.pdf).

1.2.1 Factor condition

It's all known that factor conditions includes such as natural resources, human resources, capital resources, physical infrastructure, administrative infrastructure, information infrastructure and scientific and technical infrastructure.

As for **natural resources**, The State Forest Register (SFR) of the Russian Federation, as of the beginning of 2010, estimates forest area as 1 183.7 million hectares, including 1 143.6 million hectares of forest estate land. Forest estate land does not include forest land pertaining to the Ministry of Defense and urban forests (6.1 million hectares), protected forests (26.9 million hectares), and other categories of land – 7.1 million hectares. it could be noticed that forest resource potential of Russia federation is abundant for development of forest industry as oil and gas industry in perspective.

Labour force also plays major role in growth domestic market. Relative to many other countries, the Russian workforce was relatively highly educated. The average Russian citizen (25 and older), spent 10.5 years of his/her life in school. This statistic placed Russia ahead of Brazil, India, China, South Africa, Germany, Japan, and the United Kingdom in terms of education. As of 1990, about 2.1 million people were employed in the forest sector of the former Soviet Union, including about 1.7 million people in the RSFSR (in 1991, the Russian Soviet Federative Socialist Republic was renamed the Russian Federation). Over the last twenty years, the number of employees has decreased to 1 million due to the following reasons: (1) decrease in volumes of timber harvesting and forest regeneration; (2) increase in labour efficiency at logging sites and mechanical woodprocessing enterprises; (3) reduction in administrative staff due to computerization; and (4) institutional reforms in the forest management system and the liquidation of the state forest preservation service. From 1992 to 2010, some negative changes took place in the area of scientific support of the forest sector. A series of scientific institutions were dismantled. The total number of staff, mostly researchers, was reduced. The number of scientific employees in federal forest institutions was reduced by five times and currently comprises about 600 researchers, of which 132 have a PhD, and 37 have an ScD (The Russian Federation Forest Sector Outlook Study to 2030 <http://www.fao.org/docrep/016/i3020e/i3020e00.pdf>). Statistics shows that the collapse of the former Soviet Union also prevailed the employment of forest sector in last two decades.

One of the influential factor in competitive market is a **capital resource** which also include foreign capital, can boost any infrastructure of the economy. Foreign capital in Russia amounted to some 82 billion USD in 2009, or 21% less than the previous year. Most investments were made toward the end of the year. The wood products industry gained some 682 million USD. Cyprus represented the largest investor, and Finland the second largest, in the wood products sector. However, this probably excludes small-scale Chinese sawmill investments in the Sino-Russian border region. It might be worth noting that the investments marked under Cyprus were mostly investments by Russian companies through their operations. The foreign pulp-and-paper sector invested some 1.2 billion USD in 2009. The largest investors were Germany, Austria and Finland.

In the 2010-2011 GCR (<http://www.globalcompetitionreview.com/>), the overall quality of Russia's infrastructure ranked towards the bottom of the list (94th). The railway system ranked highest at 31st while all other measures ranked lower—the quality of the port infrastructure was 93rd , air transport infrastructure was 104th, electricity supply was 80th, and roads were lowest at 125th . Russia's railway system was the most important mode of transport, with 80 percent of the country's freight traffic traveling by rail compared to only 20 percent in the West. Under Putin's rule it had received significant funding for modernization. When the government decided to initiate these upgrades, it estimated that 58 percent of railway equipment was worn out and that it would cost \$20 billion to upgrade the system. To raise the money, the government transferred the country's rail assets in 2004 to a new government-controlled company called Russian

Railways Co. with the idea of wresting control of the system from the Railways Ministry, which traditionally owned and operated the country's railways. Although the infrastructure remained government-controlled, 60 percent of the rolling stock (railroad vehicles) would eventually be under private control.

The country's airport infrastructure was inherited from the former Soviet Union. Although the government was aware of necessary modernization, financial aspects hindered airport development projects. The Russian government planned to retain 60 of the 350 airports under federal supervision and the remaining airports would go under the control of regional authorities.

Physical infrastructure for information and communications technology remained a challenge in Russia, as demonstrated by the country's Internet users, personal computer users, and mobile telephone subscribers, which ranked in the middle of the 2010-2011 GCR at 52nd, 47th, and 8th respectively. With Internet penetration rates at only 19.5 percent in 2011. Internet usage in Russia remained on the low side. The broadband Internet market was nearly nonexistent with just under 2 percent of the population subscribing to services 121 (although the country rated 50th on this measure). Because of Russia's size, Wi-Fi connections served as potential cost-effective alternatives to fixed networks, and companies such as Cisco Systems were betting on future growth. In April 2007, Cisco announced a venture capital initiative in which the company would invest in technology-related startups and in local venture capital firms that invested in technology. Its first investment was in a leading Russian e-commerce site similar to Amazon, called Ozon. In terms of landline phone service, Russia ranked 44th. Rostelecom had a strong monopoly in the long distance and international phone service markets, and its service could be inefficient and unreliable. Local phone companies were only partially privatized under the government's holding company Svyazinvest.

Russia's **science and technology infrastructure** was still in the process of being developed, despite the high quality of Russian science. The country ranked 61st on research collaboration between its industries and universities, and 50th on company spending on research and development in the 2010-2011 GCR. The country ranked 56th in terms of the availability of scientists and engineers and 53th in the quality of scientific research institutions, the latter being a legacy of the country's Soviet past. In fact, the country had up to 40 percent more scientists per capital than Germany, France, and the U.K., and 20 percent more than India.

1.2.2 Demand conditions

According to Porter's framework, demand conditions refer to the sophistication of domestic consumption and the pressure that local consumers exert on a country's firms to create and improve products and services, which are then able to compete in world markets. According to the 2010-2011 GCR, Russian buyer sophistication ranked 50th, slightly above the median, meaning that its consumers tended to be reasonably knowledgeable and demanding and looked for superior performance attributes rather than the lowest price.

At present, no federal institutions in the Russian Federation conduct scientific forecasts of demand for forest products. Consequently, demand assessments are conducted mainly by large, integrated timber companies, supplying their produce to domestic and external markets. State participation in the formation of domestic market demand for forest products is limited to public support measures for the development of national economic sectors through relevant regulations and development programs. Demand for many forest products was discouraged by the low purchasing power of the general population. A primary impact was wooden housing construction and industries supplying basic materials, such as sawnwood, plywood, fibres, plastics, and so on. With various forms of state support, the development of wooden housing construction is able to achieve high production rates on all types of wood-based panels.

In 2010, the total amount of housing construction in the Russian Federation accounted for 58.4 million square metres, of which the individual housing construction share accounted for 43.6 percent. Over 80 percent of housing construction took place in the European part of the Russian Federation. The biggest wooden housing markets were Moscow, the Moscow Region, Saint Petersburg and the Leningrad Region.

During the prospective period, external demand for forest products manufactured in the Russian Federation will not experience a marked change, amounting to: round timber, 22.8 million cubic metres; sawnwood, 26.3 million cubic metres; plywood, 2.1 million cubic metres; particle board, 578 000 cubic metres; fibreboard, 394 000 cubic metres; pulp, 3 million tonnes; and paper and cardboard, 9 million tonnes. The major importers of forest products from the Russian Federation will be China, Finland, France, Germany, Italy, Japan, the Republic of Korea, Sweden, Turkey and CIS countries.

1.2.3 Related and Supporting Industries

Within Porter's framework, the concept of related and supporting industries refers to the presence of interconnected companies and institutions in a particular field. These clusters bring together the environment, resources, and partnerships needed for innovation to occur more rapidly and easily. In Russia, the quality of local suppliers and the sophistication of production processes were both low, ranking 114th and 93rd respectively. The intensity of local competition was also low, ranking 92nd.

In the twenty-first century, the Russian government began making technology a higher national priority. In 2005, Putin announced the plan to create a network of "technoparks." This initiative aimed to raise the volume of Russia's IT market to \$40 billion, bringing high tech's share of GDP to 5 percent. The initial plan was to establish seven technology parks in seven regions across the country which would be open to technology companies, including nanotechnology and biotechnology companies. A federal budget of \$75 million was set aside by the government and it expected the parks to employ 19,000 people by 2008 and

75,000 by 2011. The Russian IT Minister predicted that the output of the technoparks would be \$749 million by 2008 and \$4.4 billion by 2011.

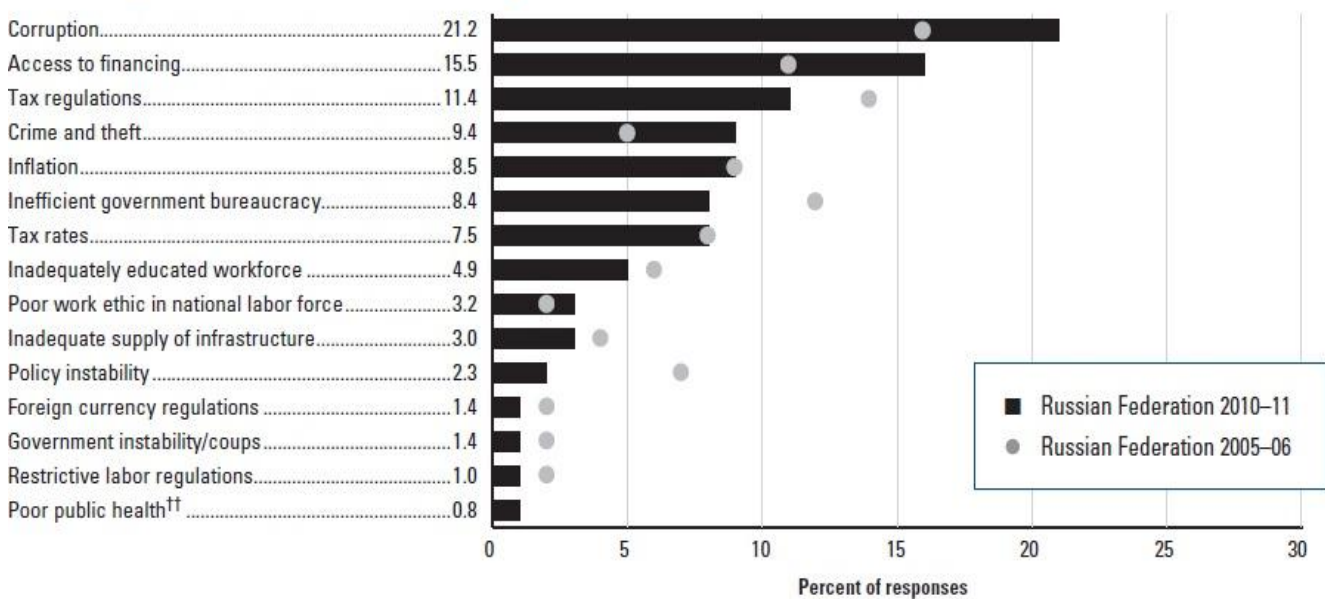
The government also established special economic zones which provided companies with long-term favorable tax breaks and adherence to private-property laws. The seven zones were in St.Petersburg, Dubna, Zelenograd, Elabuga, Lipetsk, Tomsk, and Kaliningrad.

1.2.4 Firm Strategy, Structure, and Rivalry

Despite Russia’s successes in the late 1990s and the early twenty-first century, Russia’s business environment still posed significant challenges. As noted, corruption remained a significant part of the culture, with companies that held monopoly positions or political connections receiving tax breaks, investment credits, subsidies, and guaranteed loans. According to the 2010-2011 GCR, Russia ranked 106th on the scale of favoritism in the decisions of government officials, meaning that government officials tended to favor well-connected firms and individuals; and 128th in terms of burden of government regulation. It was also 105th on the transparency of government policymaking. On organized crime it ranked 112th, indicating that crime imposed significant costs on businesses.

While there has been some improvement over the past few years, more firms complain of bribe payments to acquire business licenses, to inspectors, to tax collectors, and in dealings with courts in 2005 than in 2002. During the same period, this problem has become less acute in the Commonwealth of Independent States (CIS) and in Central Europe and the Baltic region. There are, additionally, problems with real estate transactions and land privatization, as they are neither transparent nor fair. Over one-third of the firms trying to purchase premises had to spend over half a year on that procedure; about 90 percent of the firms trying to purchase land failed to finish the procedure in half a year.

The most problematic factors for doing business

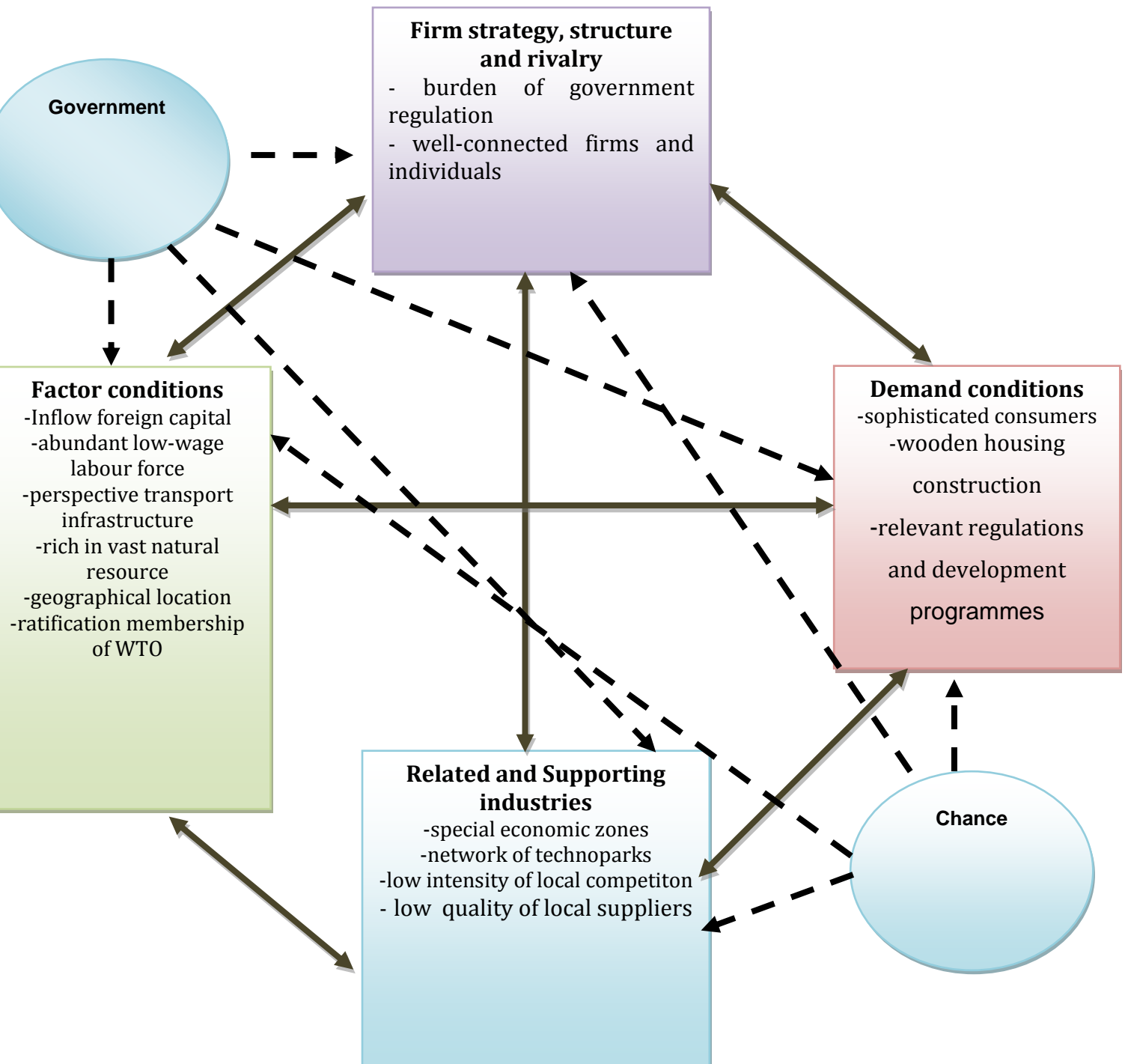


Global competitive review, <http://www.globalcompetitionreview.com/surveys/article/31273/russia/>

1.2.5 Government

Government influence can be noticed the tendency to adopt long-term projects in order to develop the particular industry and the forest industry. In 2008 the conceptions of the development of forest sector, steel industry and economic development in Russia till 2020 year were adopted. In 2005 the national project “Available and comfortable housing for Russian citizens” will cause the growth of the consumption of forest industry production. At the present, government stimulates investment in Russian economy, improves the legislation and supports the development of cooperation between foreign and local companies, either encourages the R&D.

RUSSIAN DIAMOND MODEL BY M. PORTER



2. Assessment of national business environment for the particular trans-border cluster

2.1. Finnish PESTLE analysis

Pestle factors play an important role in the value creation opportunities of a strategy. It is normally used to help organisations identify and understand the external environment in which they operate and how it will operate in the future.

PESTLE analysis of Finland identifies issues that affect the country's performance through the prism of current strengths (strengths), current challenges (weaknesses), future prospects (opportunities) and future risks (threats).

2.1.1 Political factors

Constitutional System

Finland joined the EU in 1995 and adopted the euro as its currency in 1999. The country is sparsely populated, with about ¼ of its land mass above the Arctic Circle, but boasts a modern, competitive and transparent economy with vibrant information and communications.

The Finnish political system has normally been categorized as semi-presidential, with the executive functions divided between an elected president and a government that is accountable to the parliament. However, recent constitutional reforms together with the end of the Cold War and membership in the European Union have transformed Finnish politics. The new constitution, in force since 2000, completed a period of far-reaching constitutional change that curtailed presidential powers and strengthened the roles of the government and the parliament in Finnish politics (<http://finland.fi>).

Trade policy

When we are talking about political factors we have to take in mind the trading policies. Finland's general *trade policy* emphasized dismantling barriers to trade and investment and participation in an open world economy. The key challenges include customs duties and nontariff barriers to trade and trade distorting measures that are still prevalent in many markets. Finnish Competition Authority is an organization to protect sound and effective economic competition and to increase economic efficiency in both private and public-sector activity. Membership in the EU has changed the operating environment of Finland's trade policy, and the EU's negotiating power has significantly strengthened Finland's trade policy position.

Growing international relations

Finland offers a central location in the expanding markets of Northern Europe, which is home to 80 million consumers, and provides an ideal entry to the East. Finland's long experience of trade in Northern Europe, combined with its historical and cultural ties to neighbouring countries, offers valuable insight and knowledge into the region. Finland is the ideal business gateway also to Russia. Most of the transit trade from the EU to Russia already passes through Finland. The countries share the same rail gauge, so rail cars do not require modification or reloading when they cross the border. Finland boasts functional infrastructure and modern logistics and communications networks. English is the common language of Finland's highly international business community. Over 90% of Finns under thirty speak English, while Swedish is Finland's second official language in addition to Finnish. Many Finns also speak Russian.

2.1.2 Economic factors

Finland is a sophisticated and thriving economy that consistently ranks as one of the most competitive and attractive business climates in the world. According to the World Economic Forum's Global Competitiveness Report 2011-2012, Finland had the fourth-most competitive economy in the world and the third-most competitive economy in Europe, after Switzerland and Sweden. The main pillars of the Finnish economy are information and communications technologies, industrial equipment manufacturing and forestry sector related activities such as bio-energy from wood biomass and pulp and paper. The country has a growing, vibrant and well-supported cleantech sector and a strong mining cluster in Lapland (northern Finland).

Stability of Government

The modern and competitive Finnish economy has long benefited from high levels of economic freedom. The economy remains a world leader in business freedom, trade freedom, property rights and freedom from corruption. Private enterprises continue to blossom and promote innovation in an efficient regulatory and legal environment. With prudent and sound banking practices, the financial sector has weathered the global financial turbulence relatively well. Finland's overall high level of economic freedom is curbed by high government spending and the rigidity of the labor market.

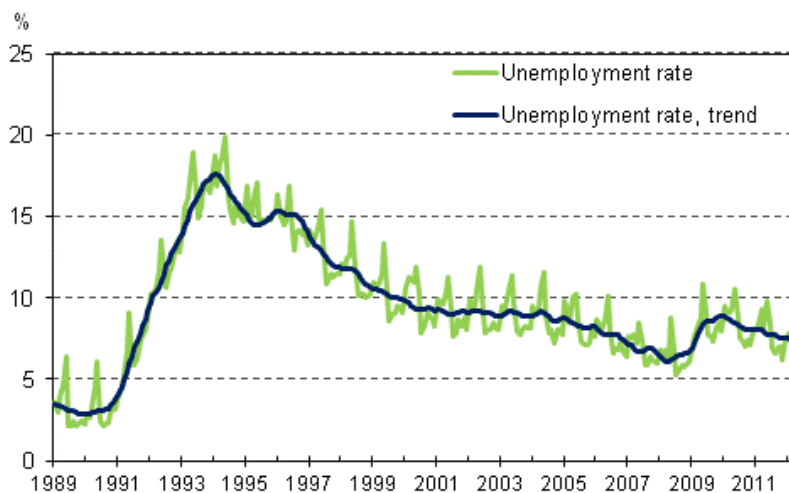
As in many other European social democracies, high government spending (close to half of Finland's GDP) supports an extensive welfare state. Restrictive labor regulations undermine employment and productivity growth. Previously robust economic growth slowed in 2009 due to the global recession, and Finland, like many other European nations, faces demographic challenges in the form of an aging population and shrinking workforce that could threaten future growth and the government's ability to maintain generous social spending programs. Finland became a member of NATO's Partnership for Peace program in 1994 but has not pursued full NATO membership because of its neutral military status.

Unemployment

It has become the most serious societal problem since the recession of the early 1990s. Especially the structural hard core of unemployment, which developed at that time, has remained practically unaffected by the recovery of the economy. At the end of 2009, half of the unemployed living on basic social security had been without work for more than two years – in reality for a great deal longer than that.

Unemployment in Finland, 1989-2011.

Various labour reforms have been launched in order to activate and harmonize policy, but these reforms are very controversial. One may argue that instead of being a mechanism for redistributing income, the social security system has been geared towards creating new hierarchies on the labour market. Service sector jobs are poorly paid as are short-term jobs. The conditions for receiving income support and unemployment benefit have been tightened up. As a consequence, people have been forced to accept deteriorating terms and



conditions on the labour market. “The new hierarchies on the labour market have coincided with slow or non-existent growth of real wages and with a strong growth of the share of capital in-come. Slow growth of real wages has kept inflation low and thus secured the value of capital. Societal development has thus progressed from equality of opportunity during the age of the welfare state towards a

hierarchical social order where the majority of people face increasing constraints and where a fortunate minority enjoys prosperity and security”, argues researcher Johannes Kananen (Kananen 2011).

<http://www.tradingeconomics.com/>



2 The nowadays situation of unemployment Rate in Finland decreased to 6.90 percent in October of 2012 from 7.10 percent in September of 2012. Unemployment Rate in Finland is reported by the Statistics Finland. Historically, from 1959 until 2012, Finland Unemployment Rate averaged 6.2 Percent reaching an all-time high of 19.9 Percent in May of 1994 and a record low of 0.7 Percent in September of 1961. In Finland, the unemployment rate measures the number of people actively looking for a job as a percentage of the labour force. This page includes a chart with historical data for Finland Unemployment Rate.

Taxation issues

Finland has moderate tax rates but a relatively high level of overall taxation. The top income tax rate is about 30 %, with municipal rates between 16.5% and 20%. In 2012 Corporation tax with 24.5% is uniform for all types of corporate income, including sales profits, interest income, dividends, royalties and rental income; value-added tax (VAT) is charged at 23% on most goods and services. Food and animal feed tax is charged at 13%.

In Finland Taxation of an individual's income is progressive. In other words, the higher the income, the higher the rate of tax payable. In 2012 the income tax rate (national tax) for an individual is between 6.5%-29.75% (<http://www.vero.fi>).

Investment system

Finland is open to foreign direct investment. It is enjoying accelerated growth in the number of foreign investors. Among other reasons that attract foreign investors, the following may be counted:

- A developed infra-structure, that includes quick and efficient access to Russia and Eastern Europe as well as 50 sea ports that make commerce efficient.
- A skilled workforce with good command of English and other languages

- A developed scientific and technological infrastructure.

As a general rule, 100% foreign ownership is recognized in most sectors and there is no discrimination against foreign companies in favor of local companies. Nevertheless, when an investor who is not a resident of a country in the European Union is concerned, a license must be obtained in sectors that may present a security, health or financial risk (<http://www.investinfinland.fi>).

Financial system

Finland's sophisticated financial system provides a wide range of services, guided by regulations and prudent lending. There are more than 300 domestic banks, but three bank groups (Nordea, OP Bank Group and Sampo Group) dominate the system. The government owns about 14% of the Sampo Group. Banking is open to foreign competition and about 60% of assets are foreign-owned. Capital markets determined interest rates and credit is available to nationals and foreigners. The stock exchange is part of a Baltic-Nordic exchange network. Merger of the Financial Supervision Authority and Insurance Supervisory Authority came into force in January 2009. Since then the impact of the global financial turmoil on the banking sector has been relatively muted (<http://www.eubusiness.com>).

2.1.3 Sociological factors

As a telling measure of its macroeconomic stability, Finland enjoys the highest possible status with the global credit rating agencies Fitch Ratings, Moody's and Standard & Poor's. According to the latest report from Fitch, Finland's AAA status "is underpinned by sound public finances, a solid external position, high income per capita, demonstrable political and social stability and an impeccable debt service record". Reliability and expertise are available in Finland's stable society; the reputation for reliability and top quality offer a good springboard. Finland has been repeatedly ranked at the top of international sustainable development indices.

Finland's multi-party democracy is characterised by a strong penchant towards consensus and pragmatic policies implemented by coalition governments. Finland is a country where everything works. American magazine, Newsweek ranked Finland as the world's best country on the basis of criteria emphasising the environment, education and quality of life.

Social protection

The constitution of Finland guarantees the basic economic, social and educational rights of all people living in the country. Social protection is made up of preventive social and health care, social welfare and health services, and sickness, disability, unemployment, old age and other benefits. Social protection aims to

safeguard the working and living environment of the population, and ensure good standards of health and work ability, sufficient income, services, and social security, at different stages of life. Practically every household at some point receives some form of income transfer or uses social and health services. Finnish social welfare is based on the Nordic welfare state model. Extensive public responsibility and tax funding are its cornerstones. The central government plays a strong guiding role in setting the basic principles of social welfare and in monitoring their implementation. However, the actual provision of social welfare is carried out at the local level, in municipalities.

Educational level

There are 20 universities in Finland: 10 multidisciplinary universities, 3 universities of technology, 3 schools of economics and business administration and 4 art academies. The network of universities covers the different parts of the country and provides a student place for almost one third of the age group. All universities are owned by the State. About a third of Finland's working population has a degree or higher qualification.

Finland's workforce is highly educated and computer literate. The knowledge transfer between business and universities has been one of the key factors in Finland's track record of innovation and economic success. According to WEF's Global Competitiveness Report 2010-2011, Finland has the best availability of scientists and engineers in the world, and they are trained by one of the best educational systems in the world. Finland's education system has consistently achieved outstanding results. WEF's Global Competitiveness Index ranks the quality of the system as the best in the world. In OECD's Programme for Student Assessment (PISA) surveys, Finnish students lead the rankings in combined learning results for science, mathematics and literacy.

Population

Finland numbers some 5.4 million and has an average population density of 17 inhabitants per square kilometre. This makes it the third most sparsely populated country in Europe, after Iceland and Norway. Population distribution is very uneven: the population is concentrated on the small southwestern coastal plain. About 64% live in towns and cities, with one million living in the Helsinki Metropolitan Area alone. In Arctic Lapland, on the other hand, there are only 2 people to every square kilometre. The official language is Finnish. As a result of the fact that Finland was a part of Sweden for seven centuries, (from the 12th century until 1809) some 6% of the population is Swedish-speaking. Finland became an independent state following the Russian revolution in 1917.

Wage system

Factors that determine a salary in Finland usually include the worker's professional skills and qualifications, experience, and where the company is located. Companies in Helsinki will offer more generous salaries than companies away from the city. Most salaries in Finland are generally collective agreements between the employee and their employer. Workers are often able to negotiate additional allowances with their employer, such as food and travel costs. Finland does not have a minimum wage for the entire country. Instead each industry makes a collective agreement that determines the minimum wage for workers within that specific field (<http://www.investinfinland.fi>).

2.1.4 Technological factors

The Finnish economy is knowledge-based and strong on innovation. It is among the top countries globally in terms of R&D spending per capita. Finnish companies and consumers are early adopters of emerging technologies, which makes Finland an ideal test bed for new solutions and technologies.

FDI in Finland is often related to knowledge-driven investments. Finland has several high-tech clusters with many technology companies that have cutting-edge expertise. These include companies specialising in wireless and mobile solutions, cleantech, healthcare and life sciences, and new materials and processes.

Main industries

The largest sector of the Finnish economy is services at 65%, followed by manufacturing and refining at 31%. Primary production is at 3%. Finland's main industrial products are paper and board, electronics and metal products.

Finland is a world leader in telecommunications equipment. Main exports include telecoms equipment and engineering products, paper, pulp and lumber, glassware, stainless steel and ceramics. Forests are still Finland's most crucial raw material resource, although the engineering and high technology industries, led by Nokia, have long been the leading branches of manufacturing.

Infrastructure and Logistic

Finland has a number of clear advantages in transportation and logistics for. Helsinki is located in the vicinity of Stockholm, St. Petersburg, Moscow, Tallinn, Riga, Copenhagen, Hamburg, Finland has a network of quality roads 78,000 km long. As the country held two international highways - E4 highway from north to south and the E18 highway from west to east. Finnish railway network comprises nearly 6000 km., With its large number of rivers, lakes, canals and marina is well-developed water transport. 21 Airport serves the needs of passenger and cargo traffic. Transport infrastructure in Finland has other strengths: a satellite tracking system for cargo, digital wireless networks, monitoring the state of the roadway, etc. All of these systems allow for real-time tracking of the shipping process and increase the safety of transport.

Finnish infrastructure all experts recognized as one of the best in the world, because it fulfills the requirements of modern businesses.

2.1.5 Legal analyses

The Finnish legal system is a civil law system. The laws of Finland are enacted in both Finnish and Swedish, the two official languages of the Republic. A significant part of Finland's binding legal norms can also be found in EU law and in Finland's international obligations. Finland has a dualist system, which requires legislation to adopt international norms into domestic law.

Higher courts do not set binding precedents either for themselves or for lower courts, but the decision of higher courts, particularly those of the Supreme Court, are understood by the lower courts to constitute guidelines from which deviation is possible only if well justified. Decisions of the institutional courts of the European Union are binding and the Finnish courts may request preliminary rulings in matters concerning implementation of EU law.

Right to Private Ownership and Establishment

Private ownership and entrepreneurship is normal in Finland. In most fields of business activity, participation by foreign companies or individuals is unrestricted. As the government pursues privatization of state-owned companies, both private and foreign participation is welcome except in some enterprises operating in sectors related to national security.

Protection of Property Rights

The Finnish legal system protects property rights, including intellectual property, and Finland adheres to numerous international agreements concerning intellectual property. Finland has joined the most important copyright agreements. Patent rights are consistent with international standards. The time of validity of patents can under certain conditions be prolonged through a Supplementary Protection Certificate. In 1996, Finland joined the European Patent Convention (EPC) and the European Patent Organization (EPO). Finland is a member of WIPO, and participates primarily through its membership in the EU. The idea of protection of intellectual property is well developed. Finland Joined WIPO's Patent Law Treaty (PLT) in March 2006.

Corruption

Corruption in Finland is covered by the Criminal Code and provides for sanctions ranging from fines to imprisonment for up to four years, depending on the seriousness of the crime. Both giving and accepting a bribe is considered a criminal act under the Criminal Code. Finland has statutory tax rules concerning non-deductibility of bribes. Finland is tied for 5th place out of 179 countries in Transparency International's Corruption Perceptions Index for 2008. Also since 1998 Finland is a signatory to the OECD Anti-Bribery Convention.

2.1.6 Environmental factors

The country's location (60°-70° northern parallels) influences the weather in Finland partly, which is common for the weather in Scandinavia. Being located in the Eurasian continent's coastal zone, Finland is both in a maritime and a continental climate.

Finland, a country of forests and lakes, is perhaps best known for its unspoilt natural beauty. Finland really cares for its natural resources and tries to prevent from main ecological problems of air and water pollution and preserve the wildlife. Finland's principal environmental agency is the Ministry of the Environment, established in 1983, whose responsibilities were to increase environmental responsibility throughout Finnish society, to ensure that environment safety and to improve the state of the Baltic Sea.

Also it were devised measures to protect the flora and fauna of the forests, which are of recreational as well as economic importance. Closed hunting seasons, nature protection areas, and other game-management measures are applied to preserve threatened animal species.

2.2 Russian PESTLE analysis

2.2.1 Political analysis

The Russian political system was reinvigorated by the election of Vladimir Putin as the new president and Dmitry Medvedev the prime minister. The new government had promised to continue with economic reforms and thereby cohesively integrate the Russian economy with the rest of the world. However, deteriorating economic conditions have brought fresh challenges for the present government. Moreover, corruption and crime, which haunts all the governmental agencies of Russia, continues to be a serious challenge to the country.

Continuity in policies

Russian politics gained considerable stability after Vladimir Putin became the president in 1999. From that point, both political and economic reforms undertaken under his leadership have taken the country on a growth path. Under Mr. Putin's leadership, the Russian economy had boasted an annual growth rate of almost 7% (IMF <http://www.imf.org/external/country/rus/rr/rus/index.htm>). Overall, the reforms undertaken by Mr. Putin elicited little opposition and his approval rating rarely fell below 70%.

International integration

Throughout last years, Russia has endeavored to closely integrate itself with the international community, resulting in large investments pouring into the country. The main goals of the Russian government during this period were to not only bring about a qualitative economic change in the country but also to transform the social structure of the Russian society, by giving more support to the rapidly growing middle class. The

Russian government has initiated free market exchange with many European countries and is on course to open its markets for many more countries around the world, which is why Russia joined the WTO in summer 2012.

Corruption and crime

Russia is ranked as one of the most corrupt nations in the world, and its performance with respect to corruption has worsened. Out of the 180 countries surveyed in terms of Corruption Perception Index (CPI), Russia was in 146th place in 2009, rising from 143rd place in 2011 (Perception Index (CPI) <http://cpi.transparency.org/cpi2011/>).

Corruption remains a barrier to foreign investments and negatively affects the country's economic development. The government has not effectively monitored and controlled these criminal and corrupt practices. These are proving to be significant impediments for the effective implementation of government policies in Russia.

Growing international relations

Russia has a strong presence in the international political arena, especially after its induction to the G7, an international association of various countries which was rechristened as the G8 after Russia's induction. Russia also take a part in the BRIC (Brazil, Russia, India and China). All these initiatives are expected to enhance Russia's position in the international arena. In a historic event for the reduction of the nuclear stockpile, both the US and Russia signed a new strategic arms agreement in April 2010.

2.2.2 Economic analysis

Russia liberalized its economy in the 1990s and reaped huge benefits. The economy's successful run since 1999 came to an end in 2008 with the mounting economic crisis. During 1999–2007, the country had one of the highest growth rates, touching around 8% in 2007 but fell back to 6% in 2008. The global economic slowdown gripped the Russian economy too, and the economy went into recession with a negative rate of 8% in 2009. Large scale government expenditure and the devaluation of the ruble have posed fresh challenges to government finances and the balance of payments. The growth rate is continued to recover to positive terms in 2010. The Russian economy continues to suffer setbacks in the form of low oil prices, a lower inflow of capital and tighter credit conditions coupled with bad corporate debt.

Successful economic reforms

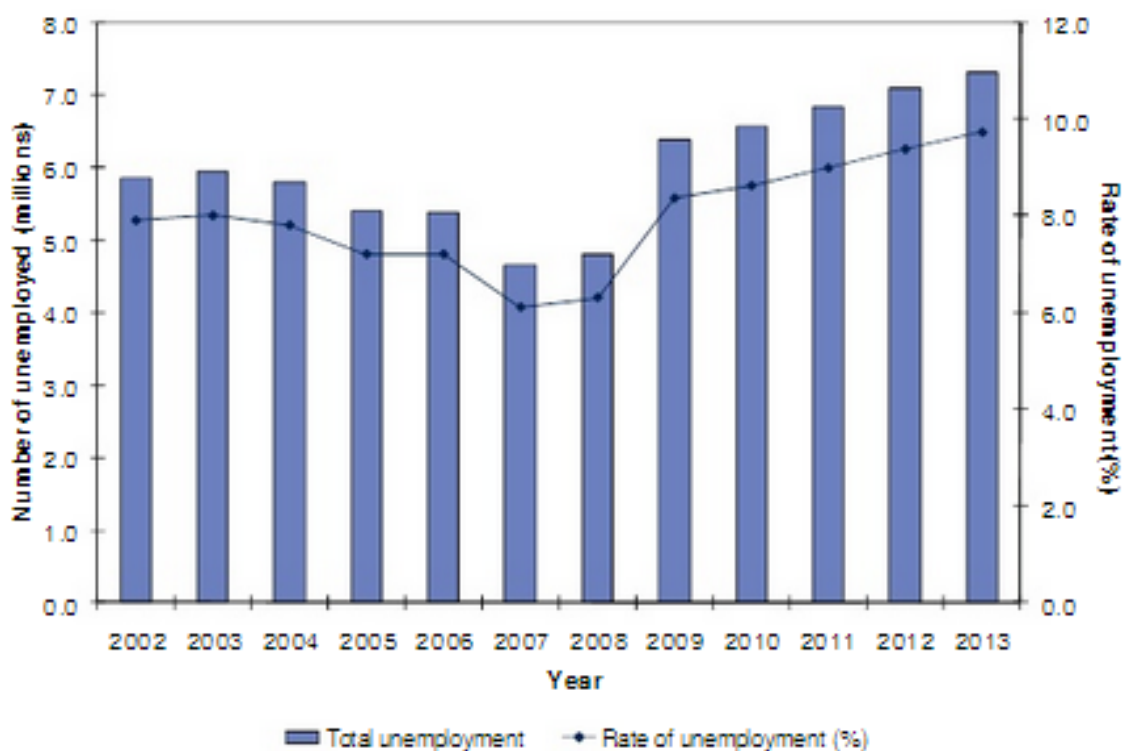
The Russian economy has been growing by 6–7% (<http://www.economy.gov.ru>) per year during 2000–07. However, due to global economic crisis, the country went into a recession in 2009. However, the economy revived quickly during the 2010 and posted a growth rate of over 3% (SberBank <http://www.cbr.ru/>). Diversifying the structure of the economy and improving the market's institutional environment are the two main reforms that the country is currently implementing. Mutual relations between government agencies and

business organizations are becoming more transparent, the efficiency of state regulation is being raised and human capital assets are being developed through responsible social policies. The reforms implemented by the government have led to closer integration with the world economy, with an ever-increasing economic growth for nearly nine years.

Unemployment

The rising unemployment level in Russia is currently posing a challenge to the government. During global economic crisis, unemployment reached a maximum of 7.1 million people in 2009. A year later, in 2010, unemployment totaled 6.4 million. Although, the government has initiated measures to reduce unemployment, the rate at which it is growing is a cause for concern. It is expected that the unemployment rate would go beyond 9.7% by 2013. The government’s intent to join hands with other Asian nations to conduct exploration in Middle East nations, instead of Russia, may also cause a hit to domestic employment in the country.

Unemployment Rate in Russia, 2002-2013.



Annex
tables
http://www.un.org/en/development/desa/policy/wesp/wesp_current/2012annex_tables.pdf

Dependence on foreign money

The Russian economy historically has been dependent on two external factors. One being the price of oil and the other is the status of international financial markets. The Russian banking sector has been one of the most fragmented banking sectors of the world with many localized banks in place. As a result there has been low trust, poor supervision and relatively small share of foreign banks. During 1999–2009, a consistent share of banking sector growth has been due to high borrowing from abroad. Foreign debt of the banking

sector matures in the 2011 was \$140 (The Central bank of the RF. <http://www.cbr.ru/statistics/>). Furthermore, the interbank market, in particular, is highly dependent on foreign money. All these factors apparently make the financial sector open to risk, because of which sector ran into crisis during 2008–09 as the supply of foreign refinancing dried up and the interbank Russian Ruble interest rates doubled in a matter of months. Russia's foreign exchange reserves in 2011 stood at \$516 billion (The Central bank of the RF http://www.cbr.ru/hd_base/mrrf/).

Growing foreign investments

Despite the dire economic situation, the foreign investments in to the country have not fallen. The FDIs into Russia grew on 21% from previous year (\$52 billion) (World Investment Report 2011. <http://www.unctad-docs.org/files/UNCTAD-WIR2011-Full-en.pdf>). This was mainly due to effective government support to revive economy out of recession which has gained foreign trust.

Adverse balance of payments

Russia has failed to develop itself into a well-diversified economy. It is dependent on imports for most of its consumer and capital needs. At the same time, it suffered a setback because of its excessive dependence on oil for its export income. Though Russia has continued to post a current account surplus, its magnitude has declined. The country's current account surplus came down from around \$70 billion in 2010 to around \$101 billion in 2011 (The Central bank of the RF. http://www.cbr.ru/statistics/?Prtid=dopbalance_table).

2.2.3 Social analysis

The social welfare system in Russia went through turmoil after the fall of the USSR. A weak healthcare system is one of the biggest challenges faced by Russia currently. Though the system is well decentralized in the country, it is inefficient, with under-qualified doctors and corrupt officials undermining the quality of treatment. Russia faces a severe demographic challenge resulting from low birth rates, poor medical care, and a rising AIDS problem. The human capital quality of Russia also compares unfavorably with other nations at the same level of development. Moreover, rising unemployment and poverty are still some of the challenges. Besides tackling the economic crisis, the government also needs to implement urgent measures to meet the challenges emerging from low birth rates and a shrinking working age population.

Improvement in real income and wage levels

During 2000–08, increased economic growth in Russia stimulated an increase in real incomes and wages of the working population. The same trend continued in 2008, with the average real wages and real disposable incomes in the first four months increasing by 13.1% and 11.8% respectively compared to the same period in 2007. The growth in real wages, during the 2007–08 surpassed the real GDP and productivity growth. Almost all sectors of the economy reported an increase in real wages of more than 10%. The largest increase

was recorded in the public sector, retail trade and construction sectors, with growth in real wages up by around 17% compared to previous periods.

Educated population

Russia has one of the most highly educated populations in the world. The country has more than 70,000 primary and secondary schools and more than 82,000 pre-schools. One of the strongest facets of the Russian education system is that a majority of the schools are in rural areas compared to urban areas, making education accessible to all areas of the country. Furthermore, the literacy rate in Russia is one of the highest in the world, at 99.4% for the total population. The high literacy rate signifies that there is a large educated workforce in the economy.

Tax benefits to healthcare and education

In January 2010, the Russian government announced that it will consider tax breaks for private enterprises in the education and healthcare sectors and expects to benefit from an eastward shift in investment. It is expected that due to increased debt and the tax burden in developed countries, the foreign investment flows would be increasingly towards eastern countries, which would be beneficial to Russia. With the view of attracting more investment into the social sector, the government intends a plan of a full profit-tax exemption for private businesses linked to human capital, such as health care and education. This would not only increase the social infrastructure in the form of new investments but also will provide more access to healthcare and educational facilities.

2.2.4 Technological analysis

Russia has historically been known for its excellence in space technologies and is one of the most successful countries in terms of its implementation of many space programs. However, the country lacks expertise in fundamental research. Although Russia is part of the G8, the country does not have enough patents registered in its name. Furthermore, the science and technology system in Russia is weak, with a lack of proper resources and funding. Nevertheless, the country is beginning to position itself as the next destination for IT sector investments.

Weak science and technology systems

The science and technology (S&T) system in Russia has been falling short of international standards mainly due to the structures of the old Soviet system exerting control over scientific streams. The chief problems of the system include language barriers, weak co-ordination of activities, a lack of active presence in international meetings, discrepancies in intellectual property rights and policies, political obstacles and

differences among scientific bodies. Adding to these reasons, corruptive practices further deteriorate the system from harmonious functioning.

Piracy and poor infrastructure

Russia is considered to have one of the highest rates of piracy. Russia reportedly had piracy rates of 68% in business software in 2008. According to the International Intellectual Property Alliance (IIPA), it was reported that business software losses due to piracy amounted to more than \$2.3 billion in 2008. Furthermore, Russia continued to be on the priority watch list of IIPA, which indicates that there is rampant piracy in the country. This is one of the worrying factors that prevent many foreign investors from starting any exclusive R&D centers in Russia. Another factor impeding investment is that although there has been economic growth, there have not been any significant efforts to build the scientific infrastructure of the country. With the government streamlining funds more towards social and military development, there are no sign of any efforts towards the future up-gradation of the scientific infrastructure and patent laws in Russia.

2.2.5 Legal analysis

The Russian judicial system has suffered from corrupt officials and practices, which have made the system unreliable. In addition, unfair competition practices are hampering the entry of FDI into Russia. However, the country has set a long list of legal reforms during 2008, which are expected to improve the country's judicial system. Russia has also agreed to various legal assistance programs from many countries to solve its domestic and international legal issues.

Conducive FDI policies

The Russian government has put in place policies which favor foreign direct investment (FDI). The 1991 Investment Code guarantees foreign investors rights equal to those of Russian investors, while the 1999 Law on Foreign Investment also follows this principle of equal treatment. Moreover, to lure foreign investors, both federal and regional governments are establishing special economic zones and high-technology parks, and special tourist regions to encourage foreign investment. Local laws are also being amended to suit the needs of foreign investors.

International co-operation for legal assistance

Russia is extending its relationships with the international community to gain legal assistance in various civil and criminal cases. In one such move, the country entered into a legal assistance program with Japan in mid-2008. According to the Russian ministry of justice, the agreement has already been co-ordinated at the level of judicial bodies and is passing co-ordinating procedures in the legal institutions of the countries.

Furthermore, the country is also entering into other similar assistance treaties with China, India and Sri Lanka. These programs are expected to bring in more positive changes to the judicial system in Russia.

2.2.6 Environmental analysis

Although an environmental management system exists in Russia, a lack of resources to tackle environmental problems is preventing Russia from effectively implementing environmental protective measures. However, the government is planning to introduce an environmental security system to address this problem. The country has also agreed upon various international environmental agreements to take up conservation activities

Environmental management systems

Russia's environmental management systems are well equipped with various levels of controls and streamlined monitoring systems. The systems are headed by a three-tier executive federal governance body comprising federal ministries (charged with developing state policies), federal services (supervision and control functions), and federal agencies (resource development and service provision). The three-tier system enables effective policy making, implementation and supervision. This system is presently playing a vital role in coordinating various conservation activities in Russia.

Lack of resources to tackle environmental problems

The biggest environmental problem facing the Russian government is its inability to tackle huge environmental issues that may arise due to military and other toxic wastes. The federal funds available for the disposal of solid fuel missiles are not sufficient for conducting any cleaning programs. There is also some concern that the current pollution charges may be abolished and replaced by an ecological tax which will go to general revenue support, resulting in a decrease in funds for environmental protection. Furthermore, there is also a scarcity of trained local staff in the country to implement environmental regulations.

3. Factor analysis - existing or possible linkages, roles of Finnish and Russian enterprises.

3.1. Access to resources

Finland is Europe's most heavily forested country, with over 3/4 of the land area representing 23 million hectares, under forest cover and it is almost 74.2% of the land area. Geographically, most of Finland is situated at a latitude of between 60 and 70 degrees north. A significant area extends north of the Arctic

Circle. The climate in Finland and Scandinavia is influenced by the Gulf Stream bringing warm water from the Atlantic. Thanks to this, there are forests even in the northernmost parts of Finland. Areas located equally far north in Russia and North America are mainly tundra, a treeless wasteland, because of the cold climate.

There are 23 paper mills, 13 paperboard mills, 15 pulp mills and 18 mills producing mechanical and semi-chemical pulp in Finland. Furniture and joinery industries have 65 production plants. The number of industrial sawmills is about 170, and of particleboard factories 11.

As in the majority of Western European countries, non-industrial forest ownership dominates in Finland. Private persons, ordinary Finnish citizens, own about 52% of all the forestry land. The Government owns 35%, forest industries 8%, and municipalities and parishes 5% of the Finnish forested area. Private forest estates are relatively small, one estate being an average of 24 hectares. The number of private forest holdings of at least two hectares is about 440,000. Private forestry has a key role in Finland, because 80–90% of Finnish wood used by the forest industry comes from privately owned forests.

The annual felled volume of Finland's forests is proportionally higher than any other Arctic country. The total volume of timber in its forests has nevertheless been continuously increasing for several decades. This has been achieved through prudent, long-term forest management practices based on profound forest knowledge and skills, which are today in high demand throughout the world. At the same time, the preservation of old-growth forests has been secured through the establishment of a network of conservation areas.

Finland's forests also have great value as a recreational amenity. Liberal laws of access to the land, known as "everyman's right", give everyone the right to roam forests and the countryside freely, and forests are the most important environments for outdoor recreational activities in Finland. About 80% of all Finnish households pick wild berries and mushrooms, for instance, and there are some 300,000 hunters across Finland - more proportionally than in any other European country. Finland's cultural heritage is also very closely linked to forests.

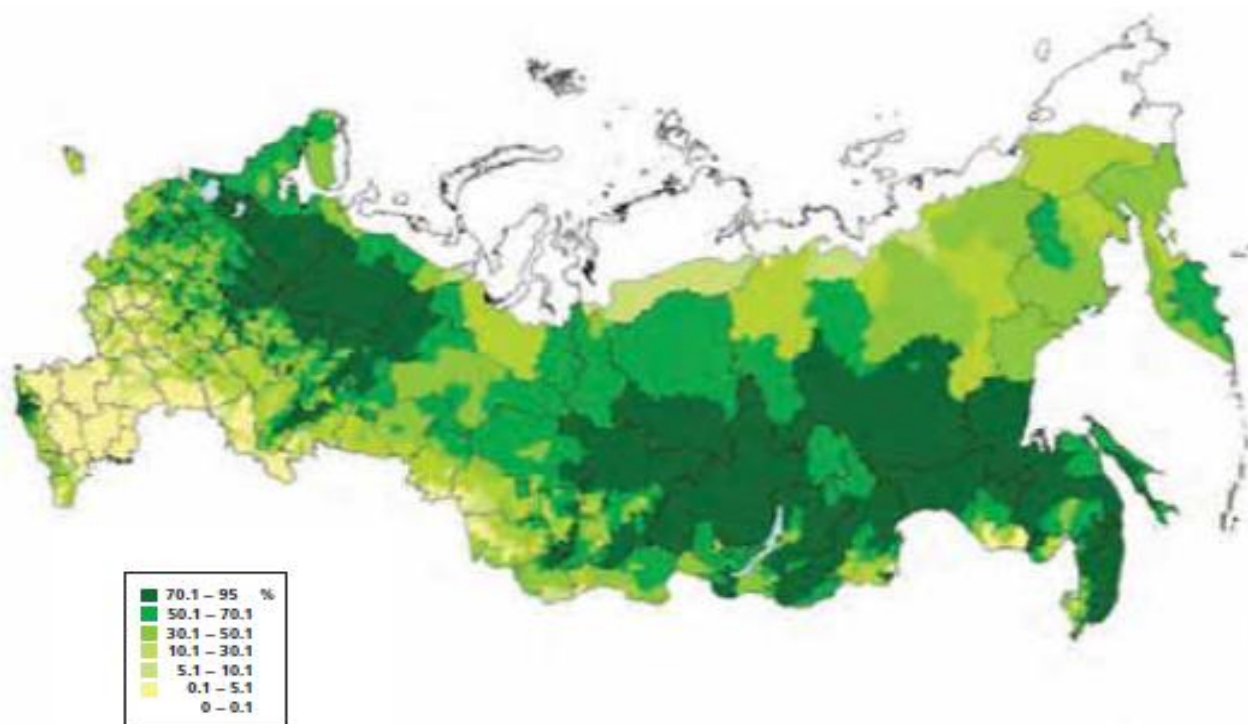
Also Finland has a larger percentage of strictly protected forests than other European countries on average, 9%, or over two million hectares. In other European countries, the comparable figure is of the order of 2% to 3%. Most of Finland's protected forests are in northern Finland, where 15.8% of the forest area is strictly protected; by contrast, in southern Finland the figure is only 2.3%. Also for the protection of the forest area the Government of Finland in March 2008 approved a new kind of forest protection action plan, the Biodiversity Programme for Southern Finland (Metso Programme). The programme is reaching to 2016 and represents a new way of thinking in the Finnish forest biodiversity protection. Earlier the most important way to protect forest biodiversity was to purchase large forest areas to the state of Finland to be strictly protected, with one-sided decisions made by the Government. The tools of the Metso Programme are more or less the opposite:

they are voluntary for the forest owner. The main target is to search cost-effective ways to safeguard nature values in private, family-owned forest.

Russia has the largest forest resource of any country: Russian forests comprise 22 %* of the world forest area (764 million ha). Russia accounts for 21 % of the world's standing timber volume. Conservation of forest biological diversity is referred to as a key principle of the forest legislation in the Russian Federation (Article 1 of the Forest Code of the Russian Federation). According to the 2010 forest account, the total growing stock of the forest estate is 80 billion m. Russia's forests have enormous resource capacity for nontimber forest uses. To promote larger-scale commercial utilisation of highly abundant non-timber forest resources is a major objective for the Russian forest sector. Russian forest ecosystems play an important role in the global carbon cycle.

The percentage of forest cover on the territory of the Russian Federation, that is, the area of forested land as a share of the total land area of the country, amounts to 46.6 percent:

Forest cover of the Russian Federation (%)



The Russian Federation Forest Sector Outlook Study to 2030

The greatest forest cover (over 80 %) is found in the Perm Kray, Republic of Komi and Central Siberia, and it is the least (below 1 %) in the Republic of Kalmykia, part of the Stavropol Kay, Astrakhan, Rostov and Volgograd Oblasts. In recent years, the forest cover tends to increase because of natural afforestation of abandoned agricultural lands. Roundwood production in the Russian Federation will increase from 143 million cubic metres in 2010 by 1.6-2.1 times, and will reach over 300 million cubic metres in 2030 under

the innovation scenario. Export growth will be insignificant taking into consideration the state policy on developing advanced wood processing inside the country. To increase wood consumption in the domestic market, measures should be taken to stimulate wood demand, primarily by developing the wooden housing construction industry. Logging growth will be ensured by priority investment projects and the construction of advanced road networks.

3.2. Supply and demand

Industrial use of forest as sawn goods and paper began in Finland in the late 19th century. A century ago, forest industry products made up 80% of Finnish exports. Today forestry and the forest industry make up about 5,1% of Finland's gross domestic product, and approximately 18% of Finnish exports. High-quality printing and writing paper make up over 40% of the total export value of forest industry products, while sawn goods and wood-based panels account for some 20% of export value. Finland is among the major supplier of forest related products to the world markets, particularly in printing and writing paper. It is also one of the biggest importers of roundwood. The European Union is the most important customer region for Finnish forest-industries' products. Some 60% of Finnish exports go to EU countries, mainly to Germany, Great Britain, France and Spain. Other European countries account for 10% of forest industry exports, and the rest of the world 30%.

Before the recent economic slowdown, forestry products accounted for some 30 percent of Finnish exports and the Finnish forestry sector employed an estimated 6 percent of the employed work force. The Finnish Ministry of Employment reports forestry and the forest and wood product industry still provide direct employment for around 75,000 Finns, while the entire forestry cluster employs around 200,000. According to the most recent figures available, forest industry products accounted for 19 percent of Finland's exports, with the industry's production valued at approximately 15 billion EUR. The forestry sector remains a crucial contributor to Finland's prosperity.

While the forest industry was particularly hard hit by the recent economic downturn, signs are clear the sector is rebounding along with the economy in general. First quarter 2011 production of paper and pulp was up by 7.2 percent compared to a year ago. The last two decades of active Russian political and economic reforms have shown the forest sector of the country to be comparatively slow in adapting to market relations and requirements. Russia accounts for over 20 percent of the world forests, but its share in the world forest products trade is below 4 percent. Semi-processed roundwood and sawnwood make up over 54 percent of its exported wood products. Forests occupy over half of the land of the country, but the share of the forest sector in the gross domestic product (GDP) is only 1.3 percent; in industrial production, 3.7 percent; in employment, 1 percent; and in export, revenue 2.4 percent. These facts prove that the colossal forest potential of the country is essentially under-utilized.

The production output of forest products for the period 1980–2010 is indicated in following table. According to expert evaluation, for example, sawnwood production in 2010 amounted to 24.7 million cubic metres compared to 19.0, according to Rosstat evaluation.

Wood products in the Russian Federation, 1980–2010 (The Russian Federation forest sector.

<http://www.fao.org/docrep/016/i3020e/i3020e00.pdf>)

Indicators	1980	1990	1995	2000	2005	2010	2010/ 1990 (%)	2010/ 2000 (%)
Roundwood (million m ³)	328.0	304.0	134.9	167.9	170.0	173.6	52.6	103.4
Sawnwood (million m ³)	80.0	75.0	26.5	20.2	22.0	19.0	25.3	94.1
Plywood (million m ³)	1.5	1.6	0.9	1.5	2.6	2.7	168.7	180.0
Particle board (million m ³)	3.5	5.6	2.2	2.3	3.9	5.5	98.2	239.0
Fibreboard (million m ³)	1.5	1.5	0.8	0.9	1.3	1.7	113.3	188.9
Pulp (thousand tonnes)	2 405	2 770	1 801	2 037	2 429	2 100	75.8	103.1
Paper and paperboard (thousand tonnes)	6 998	8 325	4 070	5 140	7 126	7 750	93.1	150.8

In 2010 gross forest products export revenues amounted to US\$9.5 billion, including European countries, 37 percent; Asian countries, 49 percent; and other countries, 14 percent. Raising roundwood export tariffs in 2008 significantly decreased roundwood exports. Despite this, Russia has to import paper, cardboard (35% relative to domestic production) and furniture (46% relative to domestic production). But the government is planning to increase the domestic production (The data are taken from www.russianforestryreview.com).

The main supplies of timber in Finland is from the Republic of Karelia and Komi, Vologda, Leningrad, Kirov, Arkhangelsk, and a number of other areas. Consumers of Russian timber in Finland are concerns "Enso" (about 4 million cubic meters.), "UPM Kymmene" (2 million cubic meters.) And "Metsäliitto" (1 million cubic meters.) Who carried out purchase their own, as well as through a number of Finnish intermediary firms, including "Thomesto", "Aran", "Kaukomarkkinat", "Karelkon."

3.3. Supply chains

The forestry wood supply chain in Finland can be defined as a network of autonomous or semiautonomous business entities collectively responsible for procurement, manufacturing and distribution activities of the product. In the supply chain different business entities are highly dependent on each other. The performance of the supply chain depends highly on the performance of each business entity. One pressing problem in several supply chains is the non-optimal use of resources. This can be solved by introducing the real-time traceability solution for the material flow.

The forest industry is the largest consumer of transport services in Finland. The share of the timber industry in the volume of rail transport is 65%. and road transport - 14%. Extraction of timber produced alloy (6%), rail (17%) and truck (77%). The average distance delivery is about 220 km. by water and by railway and 90 km. by truck.

There used to be a tendency timber transportation by timber rafting. If in 1987, floating timber was transported 6 million cubic meters. meters of wood, in 1997 - less than 1.1 million cubic meters and in 2007 the parameters decreased in 2 times. At the same time, along with the reduction of floating timber, began to increase transport of timber by water on barges and other vessels. A significant part of exports of forest products by sea, of which more than half of the export goes through three ports: Kotka (3.4 million tons), Hamina (2.3 million tons) and Rauma (2.3 million tonnes).

Analyses of logging companies in the Republic of Karelia show that bigger companies are in a better position to solve the challenges wood harvesting is facing. Nevertheless traditional harvesting methods will be used in the future and can be supported with effective western machinery. Wood harvesting costs in Russia are high and sometimes even exceed the harvesting costs in Finland, due to the low productivity of labour in companies using traditional Russian machinery. Analysis also showed that implementation of commercial thinning operations (Working Papers of the Finnish Forest Research Institute 210 <http://www.metla.fi/julkaisut/workingpapers/2011/mwp210.htm>) and use of the cut-to-length method would improve the availability of wood for markets. Also, careful modernization and introduction of new methods and technology could improve the status of forest work and help to attract more motivated and skilled employees to companies.

Currently, for the Russia side the railway transportation is the most important way to deliver wood and annual volumes are constantly increasing. Furthermore, the average transportation distance is increasing. There have, however, been problems with the availability of wood cargo wagons, and some companies have even purchased private wagons or have established transport companies.

Wood trucks are used for transporting small amounts of wood on short and medium transportation distances (<140 kilometres). In comparison to other means of transportation, truck haulage is relatively expensive due to the low carrying capacity of the trucks and poor condition of the road network. Utilization of long-distance truck transportation is decreasing and is carried out only if no other feasible means of transportation is available. Both Russian and foreign vehicles are used. Along the inland water-ways, wood is transported by shipping or by floating in bundles. The volume of water-way transportation is decreasing, which is mainly due to a reduction in the use of floating.

The industry prefers to buy private standing timber, as the cost of felling, transportation and warehousing at the specialized companies of 5-10% lower than in farming and forestry. The volume of purchases of raw wood, including imports, and the price level it is defined by the needs of the pulp and paper and wood-

processing industries in Finland related to operating capacity, market conditions for finished products, the state forest fund, dynamics of the Euro currency to the U.S. dollar.

3.4. Forest regeneration, conservation and protection.

The inertial scenario resolves traditional problems of forest protection against fires, pests, diseases and illegal activities, but does not address broader issues. The moderate scenario resolves higher-level problems, stressing balanced forest harvesting and regeneration within the established framework of spatial distribution of the forest sector. The moderate scenario is directed at the prevention of undesirable stand succession and qualitative improvement of forest resource potential on the basis of regional forestry management systems. Conditions for this scenario form the basis of the draft programme “Development of forestry for the period of 2012-2010” (Rosleshoz, 2012a).

The innovation afforestation; (7) strengthening of the role of state and society in forest management; scenario of forest sector development represents a spatial-structural reorganization of the forest sector. The following priorities shall be given preference: (1) employment growth; (2) production proximity to consumption centres; (3) woodprocessing development; (4) cooperation between small, medium and big businesses; (5) organization of multi-resource forest management; (6) strategic expansion of protective afforestation; (7) strengthening of the role of state and society in forest management; and (8) improvement of the economic mechanism for implementing federal and special programmes. Within the framework of the innovation scenario, the forest sector should recover its lost positions in sparsely and moderately wooded regions, which represent the “epicentre of consumption” of domestic forest products. This does not contradict forest sector development in richly wooded regions, which is oriented predominantly to external markets.

Forest harvesting and regeneration under different scenarios

Regeneration indicators under different scenarios	2010	2015	2020	2025	2030
I. Inertial scenario with the existing spatial-structural distribution of the forest sector with two-thirds of wood harvested in the richly wooded regions					
Roundwood production (million m ³)	142.9	178.5	188.7	203.1	232.4
Forest regeneration (thousand ha)	819.0	901.0	1 038.0	1 205.0	1 457.0
Tree planting (thousand ha)	171.0	201.0	227.0	265.0	320.0
Young stands thinning (thousand ha)	323.0	402.0	414.0	482.0	583.0
Tree planting as percentage of forest regeneration (%)	20.9	22.3	21.9	22.0	22.0
Young growth thinning as percentage of forest regeneration (%)	39.4	44.6	39.9	40.0	40.0
II. Moderate scenario with the existing spatial-structural distribution of the forest sector					
Roundwood production (million m ³)	142.9	181.2	191.0	231.8	259.4
Forest regeneration (thousand ha)	819.0	1 017.0	1 205.0	1 442.0	1 673.0
Tree planting (thousand ha)	171.0	325.0	518.0	620.0	719.0
Young stands thinning (thousand ha)	323.0	1 017.0	1 807.0	2 884.0	3 346.0
Tree planting as percentage of forest regeneration (%)	20.9	32.0	43.0	43.0	43.0
Young growth thinning as percentage of forest regeneration (%)	39.4	100.0	150.0	200.0	200.0
III. Innovation scenario with the spatial-structural transformation of the forest sector					
Roundwood production (million m ³)	142.9	191.3	207.1	248.8	301.2
Forest regeneration (thousand ha)	819.0	1 027.0	1 277.0	1 589.0	2 007.0
Tree planting (thousand ha)	171.0	442.0	638.0	795.0	1 003.0
Young stands thinning (thousand ha)	323.0	1 027.0	2 554.0	3 178.0	4 014.0
Tree planting as percentage of forest regeneration (%)	20.9	43.0	50.0	50.0	50.0
Young growth thinning as percentage of forest regeneration (%)	39.4	100.0	200.0	200.0	200.0
IV. Enveloping curve					
Roundwood production (million m ³)	142.9	178.5	191.0	248.8	301.2
Forest regeneration (thousand ha)	819.0	901.0	1 025.0	1 589.0	2 007.0
Tree planting (thousand ha)	171.0	201.0	518.0	795.0	1 003.0
Young stands thinning (thousand ha)	323.0	402.0	1 537.0	3 178.0	4 014.0
Tree planting as percentage of forest regeneration (%)	20.9	22.3	43.0	50.0	50.0
Young growth thinning as percentage of forest regeneration (%)	39.4	44.6	150.0	200.0	200.0

The currently under-utilized annual increment in the “epicentre” of domestic forest products consumption amounts to over 250 million cubic metres per year. It exceeds by half total wood harvesting in the whole of

Russia. These regions have all the necessary conditions for forest sector intensification: demand, forest resources, staff and infrastructure. The only “barrier” is inadequate legislation prohibiting timely forest renewal. Expansion of advanced processing and bioenergy production will allow the use of wood from intermediate felling and the substitution of low-grade forest stands with economically valuable species. Under the innovation scenario, any wood-harvesting increase would be supported principally through the use of the under-utilized annual wood increment in moderately wooded regions of Russia. This will allow the recovery, renewal and reconstruction of forests in the region. It would also result in the doubling of present volumes of wood harvesting by 2020 and their tripling by 2030.

Currently 126 million hectares, or 75 percent of all agricultural land, are exposed to different types of erosion. One of the main causes of erosion is the shortage of forests in the main agricultural regions. Over recent years, about 5 million hectares of protective stand have been planted, of which no more than 3 million hectares have been preserved. In order to ensure the forestry protection of agricultural land, the Russian Federation must plant 11 million hectares of various types of protective forest belts and stands. The forestry sector development scenarios presented above reflect a process of gradual intensification and ensure the balance between forest harvesting and regeneration. The increase in active forest management measures, including artificial reforestation methods and young growth thinning, will prevent unfavourable forest succession and ensure sustainable forest management in the country.

3.5. Roles of Russian and Finnish enterprises

Russia is an important and interesting cooperation partner for the forest-based sector of Finland.

The Leningrad region is dominated by large and medium size enterprises associated with international pulp and paper factories and sawmills. Realized harvesting is 4.4 million m³ and the four largest logging companies have an annual cut of more than 0.2 million m³. These companies "Russky Les" (Stora Enso), JSC "Tikhvinsky KLPKh" (UPM Kymmene), JSC "Svetogorsk" (International Paper), "Metsyliitto Podporozhje" LLC (Metsäliitto), represent the key players of the pulp and paper industry and account for 26% of the annual actual cut in the Leningrad region. The most important sawmills are Svir Timber LLC. (owned by the Metsäliitto group), Swedwood Tikhvin LLC, Mayr Melnhof Holz Efimovsky LLC, essentially producing for their own requirements and Priozersky woodprocessing plant, and JSC Lubansky LDOK, that produce mainly for the domestic market.

The Finnish forest industry companies started to grow and become more international at the end of the 1980s. This process strengthened in the last decades. The company size grew both via M&A's and direct investments and more production units were established abroad both in Europe and overseas. As a result of extensive structural changes in the forest industry in Finland has created the following forest industry groups Metso Corporation, Ahlstrom Paper Group, The Metsä Group, UPM-Kymmene Group, Stora Enso Group.

Its growing economy and abundant energy and forest resources provide diverse opportunities for the development of business activities that will remain viable long into the future. The international success of a forest sector, which bases its activities on boreal raw materials, is a shared concern for Finland and Russia.

The forest industry of Finland has played a substantial role in developing the forest sector of Northwest Russia especially. Finnish forest industry corporations have invested about a billion euro into Russia; the country has attracted Finnish sawn timber, panel and paperboard manufacturers in particular. In addition to these investments, Finland's forest industry has provided Russia with timber export revenues and created a substantial number of jobs in wood harvesting. Over the last 15 years, Russia has received some €7 billion from its timber exports to Finland.

Russia's forest resources are the world's largest at about 800 million hectares (Finnish forest resources: 22 million hectares) and Russian forests grow at an annual rate of about one billion cubic metres (Finland: about 100 million cubic metres). Over one hundred million cubic metres of Russian timber are used annually to make forest industry products. Manufacturing of sawn timber and panel products makes up the majority of Russia's forest industry. Total national output of pulp, paper and paperboard is equal to only about half of Finland's aggregate production volumes of these goods. In all, the production of the forest-based sector of Russia was worth a little more than €17 billion in 2009. Its massive forest resources and up-to-now competitive cost base are strengths for the Russian forest industry. In addition to this, the domestic market is growing rapidly in Russia.

3.6. Science and education

In 2010 the forest sector of the Russian Federation employed about 1.1 million employees, including forestry at 40 percent, wood processing at 40 percent, and the pulp and paper industry at 15 percent. According to the innovation scenario, employment will increase by 1.2-1.8 times up to 2 million people in 2030. The development of the forest sector will need serious support in terms of scientific and professional staff. The number of researchers should grow from 3 500 people in 2010 by 1.1-1.7 times in 2030, depending on the scenario.

In 2010 funding of scientific research amounted to 450 million roubles, equivalent to 0.08 percent of the GDP of the forest sector. Public financing of science will increase by 1.9-4.1 times.

In 2010 the total federal budget for professional education and training for the forest sector totalled 5 billion roubles (0.86 percent of forest sector GDP), including higher education at 3 billion roubles, secondary at 1.5 billion roubles, and basic professional education at 0.5 billion roubles. The growth of total spending on education will increase by 1.4-2 times reaching 2.3 billion roubles (about 1 percent of forest sector GDP) by 2030 under the innovation scenario. Scientific and staff support under the innovation scenario may be most

effectively implemented on the basis of state-private partnership through technology platforms. There are some education centers, what can give the special knowledge in the forest industry: St. Petersburg Research Institute of Forestry (FGU "SPbNIILH"); Northern Research Institute of Forestry (FGU "SevNIILH"); Velikoluksky Forestry College; Lisinski Forest College.

4. Cluster map

The Cluster area is located on the North-West Region of Russia and Eastern region of Finland, where many research centers and supported industry located on both sides, it's also the area where the rich forest on both sides. The reasons to create the cluster are following:

1. Both side have a lot of forest resources
2. Geographical closeness
3. The presence of sea ports and railway station and the possibility of different ways of transportation
4. Close location with foreign consumers
5. The likeliness of the timber complex industries.
6. The accessory character of national forest industries“

The major part (nearly 98%) of production of forest industry of Finland belongs to 3 large companies, such as Stora Enso, UPM-Kymmene and Metsaliitto.

As for Russian companies acting in the North West Region the companies are: open joint-stock company «Kondopoga» (paper), open joint-stock company «Kondopozhskoe Lesopromishlennoe Hozyaistvo», closed joint-stock company «Soldek», closed joint-stock company «Saint-Petersburg Oboynaya Company», open joint-stock company «Berezka», open joint-stock company «Vologdalestopprom», open joint-stock company «Ilyinskiy Lesozavod», open joint-stock company «Kemskiy Lesopilno-derevoobrabativayushiy Zavod», open jointstock company «Lesdok», open joint-stock company «Novatorskiy LPH» (timber), open joint-stock company «Onegales» (timber), open joint-stock company «Priozerskiy Mebelno erevoobrabativayushiy Kombinat», open joint-stock company «Svetogorsk» (pulp and paper), open joint-stock company «Segezhabumprom» (paper), open joint-stock company «Syktivkarsky LPK» (paper), open joint-stock company «Tegrinskiy kompleksniy lespromhoz», open joint-stock company «Shalakushales», open joint-stock company «Vologdalesprom», open joint-stock company «Pyatkaranta» (paper). These are the companies engaged in the process of end production of pulpan-paper industry. The number of procuring companies is less and includes such companies as open joint-stock company «Ergodinskiy LPH», closed joint-stock company «Mopnzenskiy Lespromhos», Nenezkiy Leshoz, open joint-stock company «Belozerskiy Lespromhoz», open joint-stock company «Lesozvod № 3», open joint-stock company «Naryan-Marskiy Lesozavod», open joint-stock company «Pskovskoye Lesopromishlennoe Predpriyatie»,

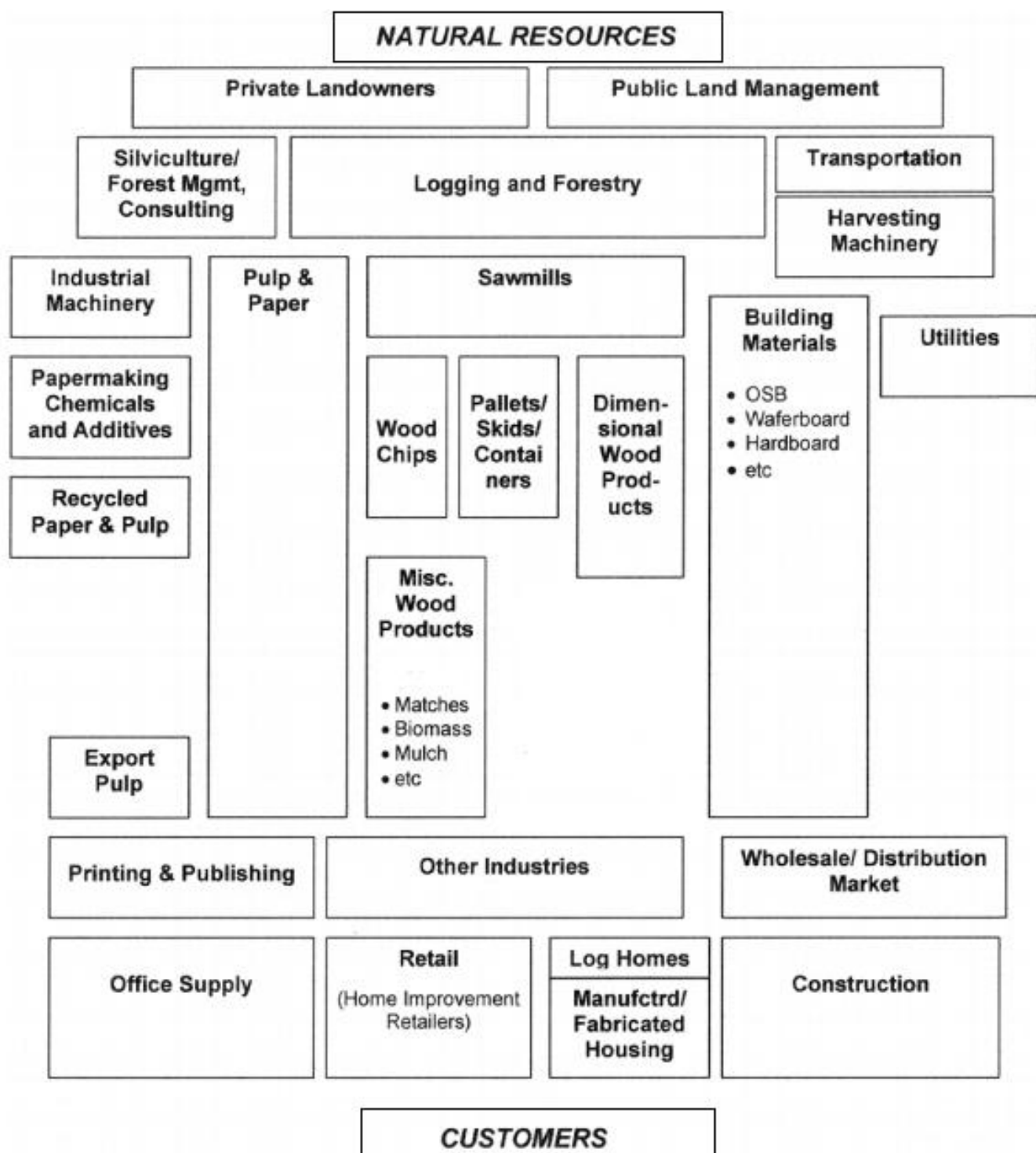
Siktivkarskaya Promishlennaya Companiya. Machinery and equipment: open joint-stock company «Velikolukskiy Zavod «Leshozmash», open joint-stock company «Bummash».

Core items produced by Finnish companies are paper, cardboard, carving wood, pulp, plywood, wood plates, joiner's items. Core items produced by Russian companies are the same. But Russian companies produce wider range of raw materials. The lack of items presented by such industries as chemical, production of equipment and tools, consultancy which are widely represented in the range of products of Finnish companies, which face the lack of raw materials. That's why we suppose that this particular cluster should be created and both sides will add each other and strengthen each other's weaknesses.

There are some problems in the development of forest industry for the participators of both countries. The problems of Russian companies' development will be listed below. As for the Finnish companies and the problems they meet, there can be mentioned the following.

The forest industry forms the core of the forest cluster in Finland; it manufactures wood products, pulp, paper and paperboard as well as converted products. Our combined cluster will include Russia. The cluster also comprises:

- forestry entrepreneurs
- logistics companies
- machinery and equipment manufacturers
- energy producers
- chemicals manufacturers
- related research institutions, universities and consultancies
- printing industry
- packaging industry
- the wood-based construction industry



A Forest Products Cluster is comprised of many different members. Visually, a generalized flow chart of the cluster is given in following table, showing process flows from resource to customer.

Generalized Forest Products Industry Cluster Flow Chart

Growth in the consumption of paper and paperboard on the European market was already low long before the economic recession. Although a turnaround has already occurred in the economy, growth is expected to remain relatively low. In addition, some assessments suggest that Europe's consumption of printing papers will never return to the pre-recession level, due to the market share lost by printed paper products to electronic media, and so only a minor growth in demand for paper products in Europe is forecast.

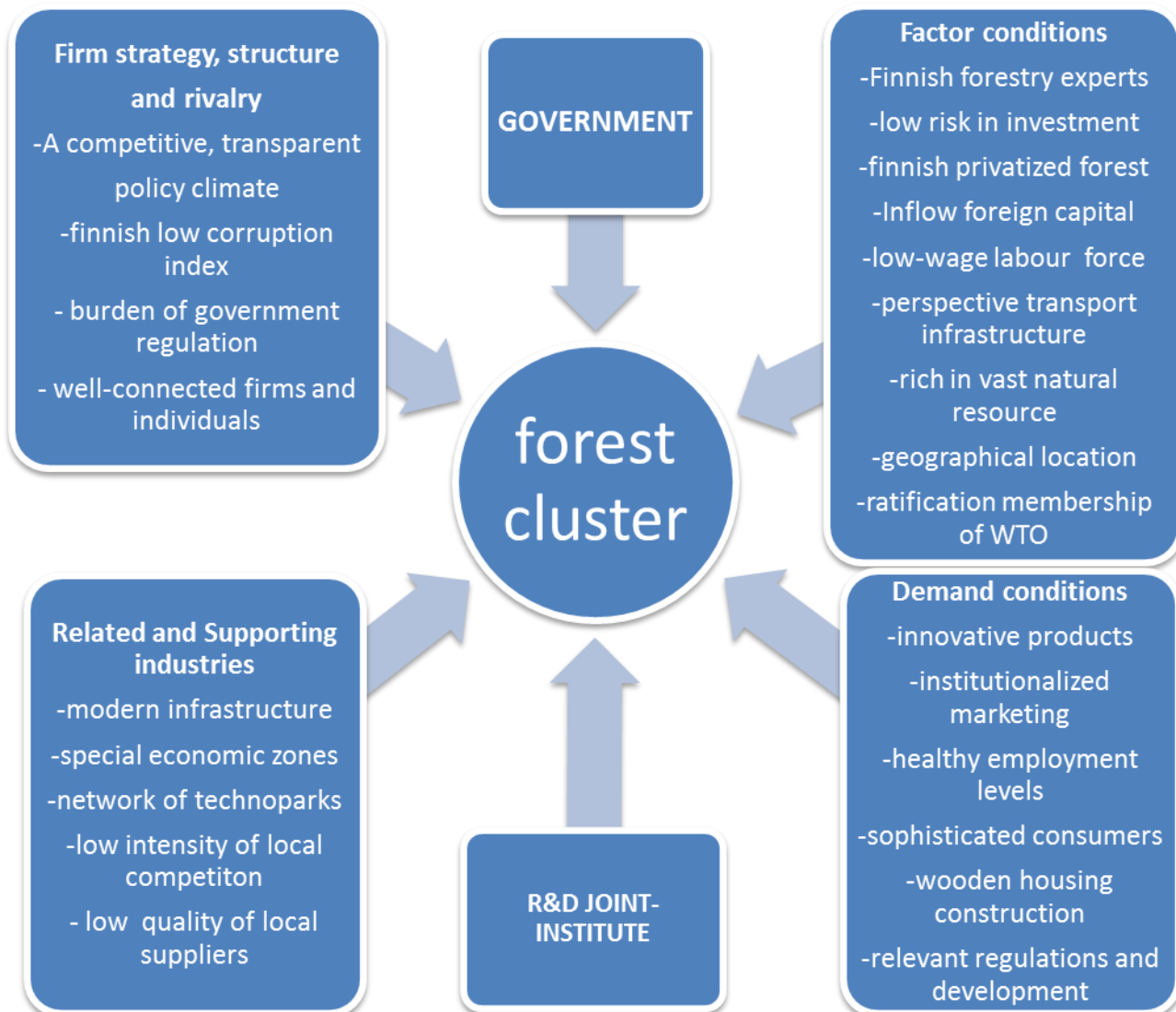
5. Cluster diamond model



Special inputs include in inexpensive labor force, energy, abundant raw materials, and vestment in our forestry cluster corporation. Factors of the special inputs are considered as a vital tool for enhancing corporation in global market. R&D joint-institute owns Finland and Russian forestry experts who are able to create innovative products, equipment and. It's impossible to imagine out life without innovative products that become an influential factor in manufacture.

Related industries and infrastructure has a great share in development in corporation that supply necessary services in cluster corporation. Market is a major factor in cluster corporation because it's important to conduct corporation coherently with a demand of the market. Business climate is a crucial for development of the economical relationship. The importance of this issue is great in business environments because it's impossible to expect any improvement in business due to existing barriers, corruption and etc.

FINNISH-RUSSIAN CLUSTER DIAMOND MODEL



Currently, the products of the Russian forest industry includes roundwood, sawnwood, plywood, particle board, fiberboard, pulp, paper and paperboard, in addition, also supplies wood products to the sphere of utilization such as construction, building and edifice restoration, furniture production, production of packages and packing materials, automobile, railways coach and container manufacturing. Finnish-Russian forestry companies maintain Finnish-Russian cluster corporation:

Roundwood- produced by such Russian companies as JSC Ladenso, JSC Medvejyegorsk KLPH, JSC Valdayskiy KLPH, JSC Lahdenpohskiy LPH, JSC Pudojles, Vologodskiy lesopromyshlenniki association,

JSC Novatorskiy LPH, JSC Onegales, JSC Shalakushales, JSC Vologdalesprom Corporation, SC Ergodinskiy LPH, JSC Monzenskiy lespromhoz, Nenetskiy Ieshoz, JSC Belozerskiy lespromhoz, JSC Lesozavod № 3, JSC Naryan-Marskiy Lesozavod, JSC Pskovskoye lesopromyshlennoe predpriyatiye, Syktyvkarskaya promyshlen-naya kompaniya. These companies provide with raw materials not only Finnish industries but also Russian companies that processing roundwood and produce forest goods of higher stage of process. Lumber – produced by such Russian companies as: SVEZA group of companies, JSC Segejskiy LDK, Vologodskiye lesopromyshlenniki association, JSC Kemskiy lesopilno-derevoobrabatyvauschiy zavod, JSC Novatorskiy LPH, JSC Onegales. Finnish companies that produce lumber are: Stora Enso, UPM-Kymmene and Metsaliitto.

Furniture – produced by such Russian companies as: JSC Pervaya mebel-naya fabrika, Belomorskiy LDK LLC, Sokol-Leshen joint venture, TOO Kos-tomukshskaya sosna. Pulp-and-paper products – produced by Russian companies: AO Kondo-poga, JSC Svetogorsk, JSC Segejabumprom, JSC Syktyvkarskiy LPK, JSC TSZ Pyatkyaranta and such Finnish companies as Stora Enso, UPM-Kymmene and Metsaliitto.

Finnish forest industry cluster include: logging, woodworking and pulp and paper industry. Main products of wood and pulp - paper industries of the country are paper, cardboard, lumber, pulp, plywood, wood boards, joinery. Logging and wood processing enterprises spread throughout Finland.

On the basis of the Finnish cluster we can create our Russian-Finnish forest cluster. It will be a good push for joint cluster. This cluster will give its advantages to both sides of this project.

The Finnish forest cluster is known the world over for its development of innovative products and services as well as for solutions tackling the challenges of sustainable development. There are a lot of advantages and opportunities for clustering:

- The forest cluster's innovations and research focus on the development of new materials, services and business models.
- The competitive power of the Cluster is based on the interaction between the its various sectors and businesses as a source of knowledge, skills, innovation and development.
- The forest cluster and its client sectors are providers of employment in Finland and Russia. The cluster strengthens the vitality of sparsely populated areas by providing a source of livelihood
- Growth and renewal spring from innovative people, companies and networks.
- An important perspective for development is also provided by the needs of customers and users, in addition to which the opportunity to create a sustainable bioeconomy is an important consideration in Finland.
- KNOW-HOW AND INNOVATION play a key role in renewing the forest cluster so that it can respond to the needs of customers and end users.

- Finland's strong technical knowledge in the forest sector give to the related service providers a competitive advantage today and in the future.

The prosperity of the forest cluster depends on maintaining and improving both its ability to regenerate and its high level of competence. The forest cluster is and will continue to be a significant contributor to the prosperity of Finland and Russia. The aim of the forest cluster is to double the value of its output by 2030. Products that are not manufactured today would account for half of the total value of production by that date.

The Finnish part forest cluster upholds and hones its competence by investing millions of Euros in research and development. The forest industry has invested annually about 100 million Euros to research and development and the objective of the whole cluster is the increase its research and development activity significantly. In turn, part of the production will be transferred to the Russian part of the cluster. In the near future, Russia will not only provide a cluster of trees, but also will produce the primary processing of wood.

Russia's WTO membership will immediately cut timber export duties and thus lower the cost of exporting raw timber from Russia to Finland. The euro amount of the softwood export duty will be halved and hardwood duties will be cut to one quarter of their present amount. Pine and spruce will in future be imported to the EU market and Finland as part of a quota totalling 9.5 million cubic metres. Export duty for spruce is 13% and for pine 15%. For birch the duty is 7% and for aspen 5%.

Removing trade and investment barriers benefits both countries. Over the last fifteen years, Finnish companies have invested a total of one billion euros in the Russian forest sector. The projects have helped Finnish forest-industry operators to acquire valuable experience in the purchasing of local raw material for plants they are planning to build in Russia.

Finland's strict Forest Act steers utilisation practices and, for example, obligates owners to regenerate forests and to safeguard biodiversity. In our clusters at Timber exports Finland, Finns and Russian will plant new trees in Russia. The major Finnish forest industry companies are among the top ten in the world and it gives a lot of opportunities to Russia for clustering not only for cooperation but for experience exchanging. At present, about half of the turnover of Finnish forest industry companies is generated by overseas production facilities. More than 50 per cent of the production capacity of the Finnish paper industry companies is located abroad.

As a result of extensive structural changes in the period 1995-2005 in the forest industry in Finland has created the following forest industry groups (associations), "Stora Enso", "UPM-Kymmene," "Metsäliitto", which accounts for over 98% of production and export of all forest products industry in Finland. However, all businesses forest industry in Finland joined the Association of the Finnish forest industry. Of the largest

timber companies in the world largest trade "Stora Enso" is the third in the world and 1st in Europe, "UPM-Kymmene" - 7th place in the world and 2nd in Europe, "M1Real" (included in "Metsäliitto") - 5th in Europe. Finnish companies are manufacturers of furniture, follow basically two strategies: either companies develop (company "Iisalmen") its own brand name, or (Company "INCAP fittings") engaged in the manufacture of finished products for the world's leading manufacturers under their brand name. The share of exports to Russia accounted for about 12% of the total exports of the Finnish furniture industry. The total amount of exports to Russia more than 34 million euros.

Russia remains an important partner for the Finnish forest sector. The rising economy and abundant energy and forest resources of Russia offer a variety of opportunities in developing far-reaching business. Further investments in the Russian forest industry are only possible, if a stable and predictable business environment can be secured. The gap between a decision to build a sawmill and the actual completion of the plant is at least two years, while for a pulp mill, the minimum is five years. Export duties of wood, which are comparable to export restrictions, are now triggering off a long-term cycle of negative development and make it more difficult for both Russian and non-Russian forest industry companies to expand their operations.

6. Conclusion & Recommendations

By Aug 2012 Russia joined the WTO to be the 156th member, it has been solved some problems with tariff, but not everything has been solved, The Finnish forest sector channel online main news is the problems plague paper exports to Russia; on the other hand the number of Finnish factories in whole Russia as in the coming table is not reflecting what should be done as FDI “ foreign direct investments”, compared to 7 factories in Germany which has less potentials regarding its forest resources. From the Russian side they should ease more the regulations for the FDI.

Company	Sawmill	Founded/ estimated	Location	Capacity, m ³ /year
Stora Enso	Impilahti	2003	Southwest Russia, about 300 km from St. Petersburg, by Lake Ladoga.	100000
Stora Enso	Nebolchi	2004	In the small village of Nebolchi	100000
			Novgorod Region, southwest Russia	
UPM-Kymmene	Pestovo	2004	Novgorod Region	300000
Botnia	Svir (Suda)	2007	In the city of Podporozhye in	100000
			Leningrad Region	
Koskisen Saha	Vologda	2007		20000
Plywood and veneer mills				
UPM-Kymmene	Chudovo	1988	Novgorod Region	
			WISA birch plywood	80000
			Craft veneer	6000
	Thsudovsky	2003	Veneer	10000000
Packaging board mills				Capacity m²/year
Stora Enso	Arzamas	2004	Corrugated packaging	90000
Stora Enso	Balabanovo	1998	Corrugated packaging	150000
Stora Enso	Lukhovitsky	2008	Corrugated packaging*	150000
Ahlström	St. Petersburg	2001	Board cells	4000

Both countries have to conduct research on creating cluster corporation, that can form a superpower in the field of forest industry. Finland should understand the raw material import era even with WTO is not going to happen, and Russia should understand protecting its industry with tariff or non-tariff is not going to improve its industry in the short or even long run. More factories should be built in the Russia not as compensation, but to act fast for responds of the market in Russia itself and for the commonwealth countries.

Some Processing on the raw material before exporting can be a way to think out of the box, more training and research centers in the field should be built more on the Russian side and utilize its human resources and promote more the cluster way of thinking. As for Russia, there's still exist negative conditions and barriers in economy which become obstacles for sustainable development. Firstly, there is still significant problems in Russia's business environment was the continued impact of corruption in both the public and private sectors. The complex central planning system of the communists left a legacy of patronage, kickbacks, and cronyism among government officials, bank employees, and productive sector managers. This culture had survived, and in many cases flourished, since the transition to capitalism, permeating and distorting many market mechanisms.

Secondly, Despite Russia's continued growth, as well as its vast potential, structural economic problems and well-publicized problems in the business environment made many individuals and groups wary of making major investments in the country. Highest on the list of concerns raised by foreign business people in periodic surveys were issues such as the pervasive influence of government bureaucracy in every area of business operations, unofficial barriers imposed by regional authorities, weak enforcement of the rule of law, and lack of respect for property rights. Taxation and business regulations were still not wholly predictable, and legal enforcement of private business agreements (especially outside Moscow and St. Petersburg) was weak.

As we mentioned above a number of negative factors and obstacles which have to be eliminated completely for creating sustainable cluster corporation. Then, one of the main task is adequate reforms in custom tariffs and tax legislation, in addition, to end a pervasive influence of government bureaucracy and regional authorities' unofficial barriers.

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St. Petersburg University of Economics and Finance
Master Programme in International Economy

Joint project of Russian and Finnish Master Students

**FINNISH-RUSSIAN TRANS-BORDER LOGISTICS CLUSTER
SURVEY**

Finnish part: Susanna Kauppinen and Ivan Korotkov
Russian part: Anastasiya Koroleva and Marina Elkova

Introduction

Analysis is the bench-mark of the strategy development.

Kenichi Ohmae.

Analysis of opportunities for development any networks and its strategy development could be described as a way of a clear organization in the future. Before you choose the way from A to B or C there is a need to understand the necessity of your activity and the barriers you may face with during your actions. The shortest way is not the safety one as practice shows. It is worth to understand will it be enough of the resources to attain an object. Analysis of opportunities for development and the strategy development help to determine company's potential and possibilities of a daily situation improvement. It designates sustainable strategy and shows the right way to move.

The investigation in this article is based on a strategic insight between Finnish-Russian inter-organizational networks – logistics in particular. Analysis of opportunities in this work is aimed to develop trans-border Finnish – Russian relationships in terms of logistics. Now the standard definition of the term "logistics" both in the world, and in Russia isn't present.

At the beginning we will give logistics definitions in Finland and Russia. In the terminological dictionary on the logistics, published in Russia in 1995, such definition of logistics is given: "Logistics – science about planning, control and management of transportation, warehousing and other material and non-material operations made in the course of finishing of raw materials and materials to manufacturing enterprise, intra factory processing of raw materials, materials and semi-finished products, finishings of finished goods to the consumer according to interests and requirements of the last, and also transfers, storages and processing of the relevant information".

Generalizing everything told above, it is possible to offer shorter definition of logistics. Logistics – science about the organization, planning, control and regulation of movement of material and information streams in space and in time from their primary source to the end user.

The logistics in Finland differs more applied character. Logistics is defined by Kaij E. Karrus as follows: Logistics is comprehensive management and development of material flows, procurement, production, distribution and recycling, maintenance services, warehousing and transportation services, as well as customer service and relations. Logistics has a direct impact on company's value chain, increasing efficiency and effectiveness, and through them customer satisfaction and profitability. (Karrus, Kaij E. 2005. Logistiikka. WSOY, Helsinki, p. 423)

The research includes national competitiveness (country model by M.Porter), competitiveness of the border region, assessment of national institution and business environment (using PESTLE analysis), factor analysis (including opportunities and constraints of the logistics), logistics cluster analysis, logistics cluster map and logistics cluster model.

In the first part of work we define logistic competitiveness of Russia and Finland on the basis of comparison of Logistics Performance Index, the analysis of advantages and shortcomings of logistic branch of the countries. Secondly we define factorial conditions of development of logistics in the country (policy, economy, technologies, and the legislation) and possibility of creation of the logistic card between Russia and Finland. At last we study possibility of

creation of clusters between two countries in the field of logistics, we offer possible effective business - model which could strengthen Russian - Finnish relationship.

It should be noted that restrictions in research of the matter weren't as the Russian-Finnish logistic clusters already exist (Tiralana, CHS Company) that allows to deepen and develop only strategy of logistic interaction between the countries. The exploration consists of table of contents, introduction-chapter, main part and conclusion. The analysis in the work is a multinational cooperating work between Russian students from FINEC University and both Finnish and Russian students from Saimaa University of Applied Sciences.

1) National competitiveness (country diamond model by Porter). Competitiveness of the border region

National competitiveness of the country is characterized by *Logistics Performance Index* Logistics Performance Index overall score reflects perceptions of a country's logistics, based on efficiency of customs clearance process, quality of trade and transport-related infrastructure, ease of arranging competitively priced ships, quality of logistics services, ability to track and trace consignments and frequency with which shipments each the consigned within the scheduled time. The index ranges from 1 to 5, with a higher score representing better performance.

The LPI's six components are:

- The efficiency of the clearance process (speed, simplicity, and predictability of formalities) by border control agencies, including customs.
- The quality of trade- and transport-related infrastructure (ports, railroads, roads, information technology).
- The ease of arranging competitively priced shipments.
- The competence and quality of logistics services (transport operators, customs brokers).
- The ability to track and trace consignments.
- The frequency with which shipments reach the consignee within the scheduled or expected delivery time.

Each of the 155 countries than receives as composite score by averaging the 1-5 ranking across each of the six criteria.

SWOT analysis (Russia):

1. Strengths

1) Unique geographical position of the region (Baltic sea, inner blueway, common border with the EU);

At 17.1 million km², Russia is the world's largest country. It has 11 time zones and stretches from the Baltic to the Pacific. Three-quarters of the country is in Asia. As a result of the country's enormous expanses, it has regions with completely different geographic, cultural and climatic conditions. Despite difficult conditions, Russia intends to become an important hub for Asian-European transport and in part for the north-south axis running from northern Europe to India. The

biggest challenges are created by its faulty infrastructure and lack of modern logistics technologies. In addition, the transformation is being slowed by bureaucratic hurdles, including customs clearance. The logistics infrastructure is to be extended particularly in the hubs of Moscow and St. Petersburg

2,3) Human resources. Large educational and science center

The access to qualified workforce in Northwest is one of the best around Russia with 936 higher-educated students per 10 000 peopleⁱ. As the amount of higher education grows, the training of workers has somewhat decreases. Thus the education seems to be on the right path –higher level of know-how is needed when the transport operations are becoming more complicated. Although the basic education is considered to be good internationally, the education given to the labor force does not match with their practical skills and know-ledge (a problem common worldwide). Company's management should improve their capabilities on handling basic, but important, business activities

4) Existence of the logistic infrastructure

The total motor road's length of Leningrad Oblast is 22 515 km. Although condition of many roads is unsatisfactory, the international E-roads are maintained in satisfactory form. The main E-roads are presented by E18 "Scandinavia", which connects Saint-Petersburg with Finland through Vyborg; E20 "Narva" connecting Saint-Petersburg with Narva; E105 "Russia" going from Norway through Murmansk to Saint-Petersburg and then to Moscow; E95 "Pskov" going through Pskov to Belorussian border.

The length of navigable rivers is 2054 km. Saint-Petersburg has developed all-year-round port, connected with sea by 27 mile canal. The freight turn-over in 2009 accounted for 50.4 mil tons/year. Rivers Neva, Svir and Volkhov are fully navigable. There are also exits to Volgo-Baltiysky and Belomoro-Baltiysky canals.

The length of railroads is 3000 km and provides a freight turnover for 100 mil tons/year. Saint-Petersburg serves as a major junction and has access to Moscow, Helsinki, Tallinn and other cities.

Warehouses in Saint-Petersburg are insufficient. The shortfall of highly technological storage space is about 500 000 sq. meters and thus the rates are among the highest in Europe. Although investments are high, the rate of building of new warehouses is constantly below plan. Doing Business report ranks Russia in terms of construction permits #182 with 53 procedures, 540 days and 4141 % of income per capita required at averageⁱⁱ.

5) The availability of raw materials

The availability of raw materials in Russia is quite good. Russia has a wide coverage of natural resources containing oil, natural gas, coal, strategic minerals including different metals and diamonds, and timber. As natural re-sources are currently Russia's main export, it creates a stable demand for logistic services in North-West region. The general need for logistics will increase also along with the general development of the Russian economy. Moving from raw materials and bulk products to more complex ones and cutting the manufacturing costs create a need for efficient logistical services. Growing economy also demands complex machinery, which makes a large part of Russia's import with around 80% of machinery in Russia being imported.

2. Weaknesses

1) The long time underestimation of the circulation sphere importance (supply and

Distribution). In the West is a *key position* in the logistics (historically the area of circulation in the country lagged behind the production, resulting in the slow movement of goods to the final consumer, poor customer service, etc.);

2) *Heavy general economic situation and social tensions throughout society*

3) *Not enough sufficient objects of logistics infrastructure* (warehouses, transportation junctions, lack of containerships“ transshipment capacity);

lagging economic infrastructure even the average world level: irrational development of distribution structures, low level of development of modern electronic communication systems, the backward transport infrastructure (particularly in the area of roads) and technical and technological level of development of the means of transport;

4) *Poor development of the production and packaging industry.*

3. Opportunities

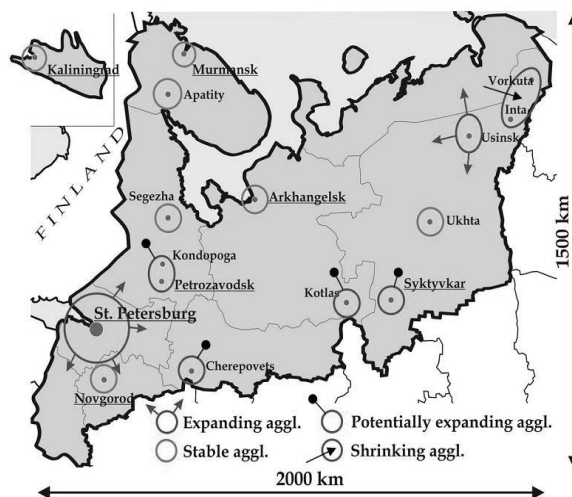
1) *Globalization process* (Russian Integration into Global Economy (WTO - participation) => increasing volume of international trade => in-creasing demand for intercontinental transportation;

2) *Long-term support of logistics development from the government – transport strategy*

4. Threats

1) *Dependence of the Russian economy on oil prices*

2) *Increase in competitive ability from abroad industries after the join of WTO*



Picture 1. Competitiveness of the border region

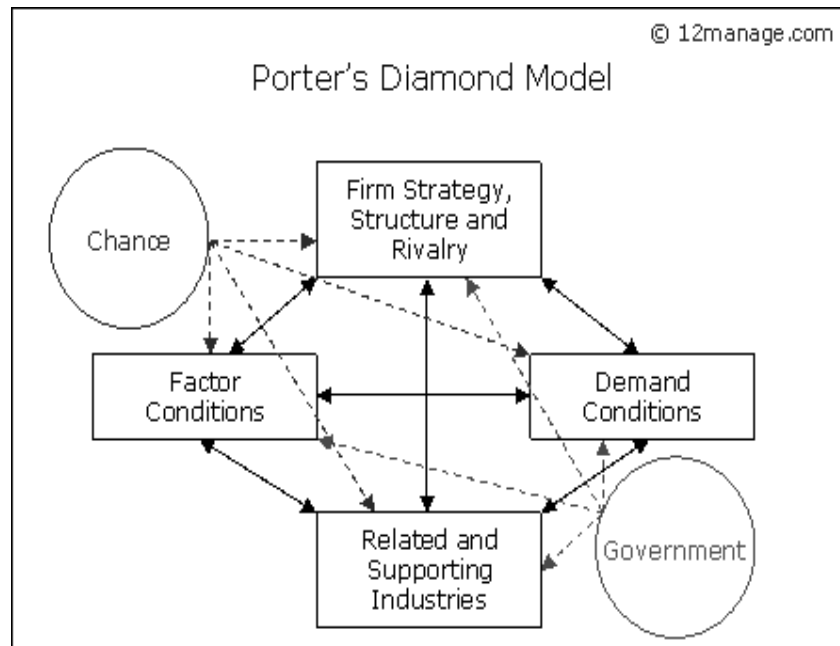
Source: <http://www.rbc.ru/> - RUSSIAN TRANSPORT AND LOGISTICS SERVICES MARKET IN 2010-2011 AND FORECAST TO 2014

Industrial agglomerations

Transportation is focused on the surroundings of industrial agglomerations – in other words near the need for transportation functions. Figure 1 presents the main industrial agglomerations in Northwest Russia. The expanding or potentially expanding agglomerations are located in the southern parts of the North-West region, Usinks being an exception. These six agglomerations have better business opportunities for logistics and logistical operations, while the geographical wideness and sparsely inhabitant character of the

North-West sets a challenge for the logistical services to operate between these agglomerations.

Diamond model by Porter (Russia)



Picture 2. Porter's Diamond Model

Source: <http://www.12manage.com/>- all you need to know about management

- **Factor conditions** are human resources, physical resources, knowledge resources, capital resources and infrastructure. Specialized resources are often specific for an industry and important for its competitiveness. Specific resources can be created to compensate for factor disadvantages.
- **Demand conditions** in the home market can help companies create a competitive advantage, when sophisticated home market buyers pressure firms to innovate faster and to create more advanced products than those of competitors.
- **Related and supporting industries** can produce inputs which are important for innovation and internationalization. These industries provide cost-effective inputs, but they also participate in the upgrading process, thus stimulating other companies in the chain to innovate.
- **Firm strategy, structure and rivalry** constitute the fourth determinant of competitiveness. The way in which companies are created, set goals and are managed is important for success. But the presence of intense rivalry in the home base is also important; it creates pressure to innovate in order to upgrade competitiveness.
- **Government** can influence each of the above four determinants of competitiveness. Clearly government can influence the supply conditions of key production factors, demand conditions in the home market, and competition between firms. Government interventions can occur at local, regional, national or supranational level.
- **Chance** events are occurrences that are outside of control of a firm. They are important because they create discontinuities in which some gain competitive positions and some lose.

Factor Conditions:

Factor conditions should be divided into basic and advanced factors. The stronger the advanced factors in an industry are, the more competitive the firms in this industry are. Without appropriate advanced factor conditions, firms would have to expend their own resources to provide such structures for commerce.

Generally saying, the basic factors for logistics are the location and basic infrastructure, e.g. road haulage requires roads; sea shipping requires a sea and port; cross-border transit requires a border nearby and custom services etc.

The advanced factors for logistics are appropriate infrastructure; access to trucks, ships, trains and other machinery; qualified workforce etc. Without appropriate advanced factor conditions, firms would have to expend their own re-sources to provide such structures for commerce.

Geographic location of Saint-Petersburg is one of the crucial competitive factors. The access to the Baltic Sea, availability of inland waterway and proximity of European Union border makes Saint-Petersburg and Leningrad oblast a historical site of goods exchange. The total motor road's length of Leningrad Oblast is 22 515 km. Although condition of many roads is unsatisfactory, the international E-roads are maintained in satisfactory form. The main E-roads are presented by E18 "Scandinavia", which connects Saint-Petersburg with Finland through Vyborg; E20 "Narva" connecting Saint-Petersburg with Narva; E105 "Russia" going from Norway through Murmansk to Saint-Petersburg and then to Moscow; E95 "Pskov" going through Pskov to Belorussian border.

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Demand Conditions:

Northwest Russia is the only macro region in Russia with a border with five EU countries. Thus its location accelerates the logistical development of the region. The availability of raw materials in Russia is quite good. Russia has a wide coverage of natural resources containing oil, natural gas, coal, strategic minerals including different metals and diamonds, and timber.

As natural re-sources are currently Russia's main export, it creates a stable demand for logistic services in North-West region.

This also means that bulk-related transports will continue and become more complex, when some resources – for instance oil – will become scarce and thus have to be acquired from places difficult to approach.

The general need for logistics will increase also along with the general development of the Russian economy. Moving from raw materials and bulk products to more complex ones and cutting the manufacturing costs create a need for efficient logistical services. Growing economy also demands complex machinery, which makes a large part of Russia's import with around 80% of machinery in Russia being importedⁱⁱⁱ.

Transportation is focused on the surroundings of industrial agglomerations – in other words near the need for transportation functions. Figure 1 presents the main industrial agglomerations in Northwest Russia. The expanding or potentially expanding agglomerations are located in the southern parts of the North-West region, Usinks being an exception. These six agglomerations have better business opportunities for logistics and logistical operations, while the geographical wideness and sparsely inhabitant character of the North-West sets a challenge for the logistical services to operate between these agglomerations.

Corporate Strategy, Structure and Rivalry:

Companies on Russia's logistics market can be divided by 5 types:

1. Government-owned companies,
2. Former subdivisions of large industrial companies,
3. Privatized firms, ex government-owned,
4. Totally new Russian companies,
5. International companies, e.g. large logistics chains (Schenker, Danzas, etc.).

The management knowledge in strategy planning, marketing issues, financial issues, and working in a competitive environment is rather unsatisfactory. It is common that the organizational structures are heavy because of a strict hierarchy. Also the number of inherited employees is usually excessive, making the labor efficiency low. Surveys say that only 43% of industrial companies and 50% of trading companies are satisfied with logistics efficiency^{iv}. There is a lot to do to make the Russian firms genuinely competitive. Strategies have to be planned, the management has to be optimized, the employees have to be trained, the infrastructure and equipment have to be updated, etc. Adopting finish solutions can resolve some of the issues.

In must be also noted that Russian railroads are owned by government monopoly RZhD, which operates 99% of railways, 90% of locomotives and over half of other cars. Therefore most companies use rented cars and locomotives and the tariff system is government-regulated. The companies see their main threats in rise of costs (as companies compete mainly by prices), lowering demand (as most companies have to pay the rent for machinery and credits) and rise in competition in general.

Related Industries:

Logistics operations have a major influence on all the manufacturing in-dustries – and vice versa. However, the manufacturing of transport equipment, energy and ICT sectors can be considered as the most important industries in the development of logistics in Russia.

In markets as wide as Russia, efficient domestic production of transport equipment would increase the competitiveness of the whole cluster. North-West has some major transport production such as Ford factory in Vsevolozhsk; Caterpillar factory in Tosno; shipbuilding in Vyborg and one of the largest carriage building factories in Russia – Titran-express in

Tikhvin. The Russian domestic manufacturing of transport vehicles has strong ties with the military, for example in the aviation the strongest products are military aircrafts.

The role of the energy sector is two-fold. The trade of energy-related products is large, though it concentrates on the pipelines. Moreover, transportation consumes a great deal of energy in the form of fuel and electricity. Having domestic energy sources should generate synergies, if the relationships are well organized and managed.

The growing ICT sector has made applications enhancing the productiveness of transports. It is said that the Russian logistics needs the implementation of informatics systems in the operations. Systems that would allow controlling the cargo flows more automatically by the clients are already in use in the developed countries, and thus the global companies are used to the efficiency they provide.

Government:

Government regulation plays a major role in development and operation of transportation. Russian government control almost entire basic infrastructure as well as many transport terminals. It also owns shares in many large logistics-related companies and sets the tariffs for railroad and pipeline transportation.

Generally, the more important the role of a transport connection is to the Russian economy, the more it is controlled by the ministries. Passenger transportation is more regulated than goods transportation, as government struggles to keep the tariffs for citizens low. Thus, in order to gain profits tariffs for commercial companies are rising.

Government admits that transport system is often deficient and not optimal. To solve this issues “The transportation strategy” was developed in 2003, which stipulate a range of measures to 2020. The following main issues are covered in the strategy^v:

- Development guidelines for transportation networks
- Priorities for all transport modes and directions for implementing those priorities
- Acts as a basis for all transport-related decision making in order to ensure that all the transportation branches are developed efficiently.

2) Geographic challenges of Russia

At 17.1 million km², Russia is the world’s largest country. It has 11 time zones and stretches from the Baltic to the Pacific. Three-quarters of the country is in Asia. As a result of the country’s enormous expanses, it has regions with completely different geographic, cultural and climatic conditions.

Despite difficult conditions, Russia intends to become an important hub for Asian-European transport and in part for the north-south axis running from northern Europe to India. The biggest challenges are created by its faulty infrastructure and lack of modern logistics technologies. In addition, the transformation is being slowed by bureaucratic hurdles, including customs clearance. The logistics infrastructure is to be extended particularly in the hubs of Moscow and St. Petersburg.

3) Core countries for trade

Russia’s biggest export partners are the Netherlands, Italy, Germany, China, Ukraine and Turkey. The most imports come from Germany, China, Ukraine, Japan, Korea and the United States^{vi}.

4) **Russian infrastructure**

Road density is very thin at 40 m of road per km². This is the result of the sparse population of many regions in the country, among other things. Nonetheless, most of freight transports between western Europe and Russia are done by road - through Poland and Belarus or over the northern route through Poland and the Baltic states.

A growing amount of freight transports passes through European harbors like Hamburg and then through harbors in the Baltic states, Finland and northern Russia. Once in the country, freight is transported primarily by truck and, to a lesser extent, by rail.

The Russian rail network is about 85,000 kilometers long, the world's second largest. Within Russia, rail transport makes up the largest share of freight transport at 83 percent. The focus of rail transports is both shipments between Russia and Europe and through transports from Europe to Asia via Russia [3, 4].

The trans-Siberian railroad plays a particularly interesting role here. Thanks to this link, shipment times of goods between Pusan and Helsinki can be reduced from about 47 days by ship to around 16 days. The potential of the trans-Siberian railroad is about 300,000 TEU Twenty foot equivalent unit per year. But it cannot really put its strengths to use at the moment. The reasons for this include rates and handling procedures by the Russian railroad company, bureaucratic hurdles - particularly customs agencies - and the introduction of a value-added tax on transport services.

Russia's infrastructure is especially deficient in terms of maintenance and modernization. The lack of multimodal goods transshipping hubs and the current transport systems generate few network effects for logistics service providers.

5) **Logistics requirements and service areas**

Fueled by Russia's economic growth, the demand for transport services has jumped considerably. In 2009, the market volume for logistics totaled about \$120 billion^{vii}. An average growth rate of 16 percent is forecast. In particular, transports between Europe and Russia will continue to increase in years ahead. A large share of these transports will be exports of Russia's abundant natural resources, including crude oil and natural gas.

The Russian logistics market is characterized by a lack of competition, little transparency and limited logistics know-how. Many companies have high storage and transport costs. At the same time, the share of outsourcing Outsourcing in logistics is constantly rising. Experts say this share amounted to about 45 percent in 2010. For this reason, demands for more and more sector-specific and innovative logistics concepts are growing.

Russian logistics service providers still focus primarily on the core services of transport and storage. The inclusion of value-added services like assembly processes and packing is in its infancy. Broad development potential is seen for contract logistics in Russia. Some logistics service providers are already offering services that extend beyond product transshipping.

These new services include labeling, market-specific provision of manuals and the conversion of DVD players to Russian standards.

International logistics service providers rely heavily on local partners particularly in the CEP [Courier, express end parcel services] area because a company must make large investments if it is to cover the entire country with its own means of transport.

6) **Logistics centers in Russia**

The most important logistics centers in Russia are Moscow and St. Petersburg. But other economic centers, including Samara, Nizhny Novgorod, Kazan, Yekaterinburg, Novosibirsk and Rostov, are becoming increasingly important in the regions as logistics centers because of growth in retail and industry^{viii}. The government views expansion of the transport and logistics sector as an opportunity to diversify the economy. For this reason, large investments will be made in the expansion of existing logistics centers and the construction of new ones. For instance, a Moscow consortium is investing hundreds of millions of euros to develop a series of logistics terminals.

7) **Important logistics service providers**

The important Russian logistics service providers are STS Logistics, National Logistic Company (NLK), Russian Logistic Service, the Interterminal Group and Eurosib. The most important international logistics service providers in Russia are DHL, Rewiko/Fiege Group, Militzer&Münch, Hellmann Worldwide Logistics and Schenker

The competition in the Russian logistics market

In the conditions of the growing competition a degree of service of clients (quality and range of services) becomes a determinant in the logistics sphere. Thus it is necessary to note that the number of the logistic companies operating today in the Russian market, is much less, than, for example, in Europe and China.

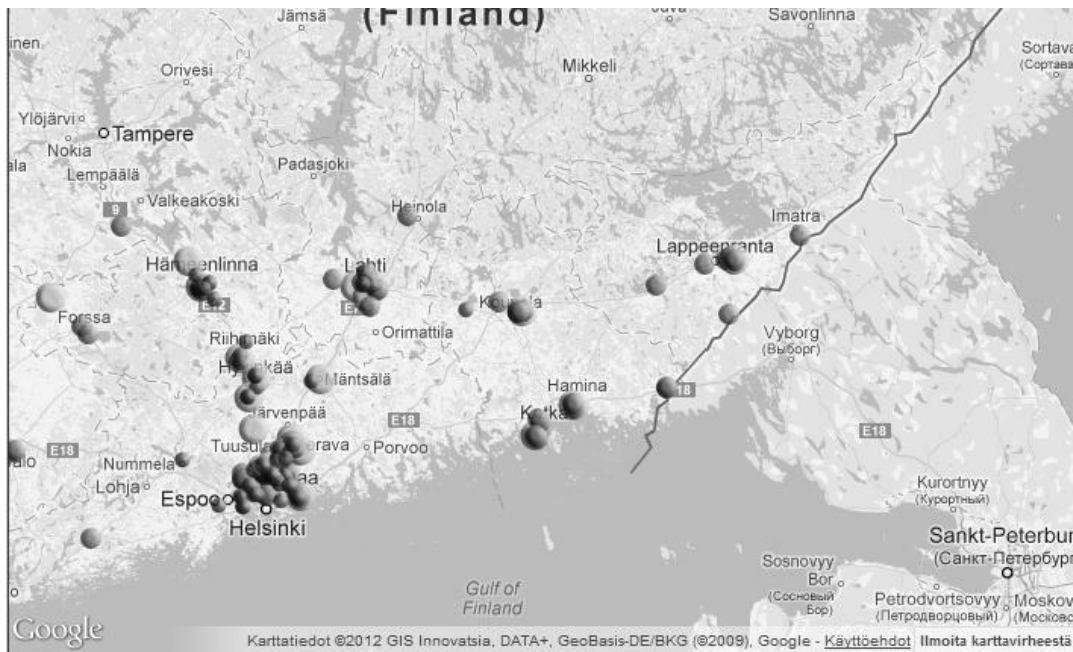
It is necessary to notice that, despite insufficient development of the market of transport and logistics services in Russia, the domestic companies possess rather high competitiveness on it. In case of mass arrival on the market of the large foreign companies possessing huge financial resources, the Russian companies can be forced almost out. However occurrence of the megacompanies not to avoid, and accession to WTO will accelerate and will aggravate this process. In this regard integration of existing players, and with another – the thought-over policy of the state on support of the domestic companies is necessary.

However in a segment of 3PL of services it is considered to be key players the western logistic providers having a wide experience of the solution of tasks of the large production and trading companies whom they serve worldwide. In competitive sector of the market of transport and logistics services (automobile, sea and air transport, container transportations, warehouse and administrative services – i.e. all segments, excepting rail transportation of JSC RZhD) more than 4 thousand companies are presented. To level of 3PL of the providers, capable to render all complex of services (including with a high share in the added cost), by RBC estimates, it is possible to carry no more than one hundred companies, including the western logistic operators.

To the complex logistics which development began only in recent years and while covers the Moscow region and St. Petersburg, demand essentially advances the offer in a segment. Increase of the competition is expected in medium-term prospect, after input in a turn of the new warehouse areas in regions of the Russian Federation and growth of the offer of services in storage and distribution of the goods.

Now it is the share of a share of 20 leading companies of about a third of a competitive segment and about 9 % of a total volume of the transport and logistics market of Russia^{ix}. In the first twenty of players, along with the Russian companies, eight western 3PL of providers enter.

Logistic centers in Finland



Picture 3: Main logistic centers in Southern Finland

There are around 200 logistic centers and areas in Southern Finland, part of them are shown in the picture above.

According to the six-class classification of logistic centers and areas made by Pöyry consulting company and Technical Research Centre of Finland, there are four different types of centers in the area. Biggest one, circled with purple line in picture 1, is class “L0” actor in the field. It is a zone which consists of logistic centers and areas and it is parallel to the major routes.

Other centers shown in picture 2:

- Red dots are in class “L4” which means that the center is for “closed circle”, such as one company or store. Example of this is wellbeing industry company HaltonOy near Kouvola in picture above.

- Blue dots are in class “L3”. These are described to be logistics service centers, which are open to all customers. It is administrated by one company or organization but there might be several other actors. In South East Finland, these centers are concentrated mainly in major cities and close to the Russian border.

Port of HaminaKotka Ltd is very significant in the area. It is the biggest universal, export and transshipment port in Finland. There are 10 port operators and also 170 other companies and businesses. (Port of HaminaKotka)

- Yellow dots mean class “L2”. These are so called freight villages, where are several actors, warehouses and other logistics services. There are no freight villages in South East Finland at the moment.

Border traffic

There’s lots of border traffic between Russia and Finland. In the table is shown amount of traffic in October 2012. Example is only from roads, excl. railways and seaborne transport.

Table 1: Border traffic in October 2012, border stations between South East Finland and North West Russia. (The Finnish Border Guard)

Site	Direction	Cars and vans	Buses	Trucks	Total
Vaalimaa	To Russia	49956	670	15012	65647
Torfjanovka	To Finland	55418	737	14531	70686
Nuijamaa	To Russia	46591	527	8763	55881
Brusnitsjnoje	To Finland	48484	1591	8238	58313
Imatra	To Russia	38575	263	5229	44067
Svetogorsk	To Finland	36213	238	5681	42132

Source:

http://portal.liikennevirasto.fi/sivu/www/e/fta/statistics/traffic_statistics/border_traffic

National competitiveness (Finland)

SWOT

Finland's Baltic highway works excellently as does transport between Finland and Russia, by making use of existing synergy benefits, Finland – based logistics companies are the leading carriers of high value goods in Russian foreign trade. Like western companies in the industry, Finnish logistics businesses are expanding their operations into Russia. Logistic industry income from Russian transports is increasing by at least eight percent a year.

A key challenge for Finland's infrastructure and logistics policy is to make sure there is access to reliable and moderately priced international routes to and from Finland's major export and import markets. The EU is committed to promoting closer EU-Russian integration and to achieve strategic partnership. It is in Finland's best interest actively to promote that partnership. There are both constant and variable factors in Finland's logistic position. One constant factor is the country's geographic location. i.e. its distance from its main markets. In logistics, distance is the definite disadvantage, reducing speed and adding to costs.

The key for developing Finland's export and import logistics, and at once transport, lies in the improvement of border crossing practices. It is necessary to apply all the methods set out in this development program in the effort to develop operational practices, technology and know-how.

Strengths & Opportunities

Finland's competitiveness in Russian foreign trade logistics is based on geographic proximity, a competitive infrastructure, the speed of transport, safety and value added services and a high level of logistics know-how. Finland has a rather good rail network and adequate resources and adequate resources to address customer needs.

Air freight accounts for more than ten percent of the value of foreign trade transport. In respect of air transport Finland remains a strong position at least for the time being. Finland location is ideal for intercontinental, air transport. Finland is less vulnerable to the kind of sudden risks that are typical of Russian transport. The volume of Finland's own foreign shipments is not enough to produce sufficiently frequent and regular services to Central Europe and ocean ports.

Domestic markets in Finland are very small. The main markets are overseas and intensely competitive. On the other hand the markets are growing very rapidly. Factors of production are limited, and energy imports, for instance, are substantial. In some market segments

Finland has world leading expertise and successful companies that attract business from far afield.

Weaknesses & Threats

The Finnish route to Russia from Central Europe is longer than those through the Baltic countries and the direct routes from Central Europe. Cost levels in Finland are – wages, fuel, charges, etc. are higher than in rival countries.

A Geographical Competitiveness: Finland is located on the North West of Russia; Baltic Sea is bordered by Finland and has many important ports. Finland owns also a large fleet of ships and well structured rail roads which makes it suitable for logistics operations with Russia. (p.92)

Russia is 8 % of all of the globe land and it contains huge amount of natural resources that can be transported to EU countries through Finland easily, as Finland is also a member of EU. (p.92)

One main problem is that the state of roads inside Russia is not satisfactory although there is a good infra-structure. We have noticed in many points there is there is congestion in the roads connecting Russia and Finland and that is due to long procedures on the borders and mainly it is affected by the capacity of the roads. If we wish to increase the logistics capabilities between two countries then we have to increase the rail way capacity. We also have to facilitate the procedures in the borders between two countries (p.93)

For example:

The distance between Lappeenranta (which is considered an important city for Finnish-Russian cooperation) is 181.2 KM but one spends around 5 hours in this trip because of long procedures and the capacity of the roads. If we reduce the time of transport, it means we can transfer more goods & people between both countries.

Logistic performance index

The LPI measures on-the-ground trade logistics performance— this year, in 155 countries— helping national leaders, key policymakers, and private sector traders understand the challenges they and their trading partners face in reducing logistical barriers to international commerce. (http://www.logist-ics.ru/sites/default/files/LPI_2012_final.pdf) The Finland LPI is incredibly high. Finland stands on a 3-d place and has 97,6 % of highest performance, its score is 4,05.

Opportunities and constraints for the particular trans-border cluster to grow.

The Finnish logistics industry benefited from the collapse of the Soviet Union. After the collapse, there was a sudden increase in the traffic between Russia and Finland. This opened many opportunities to many companies, especially in tracking because Russian companies lacked either the knowledge or the equipment to handle the increase. The business was quite steady before the Russian ruble crisis in 1998. The crisis led to decrease the traffic, both trade and transit, causing problems to Finnish companies and changing the competition environment once again. Because of the lower costs for Russian tracking companies, they took over the majority over traffic between Russia and Finland. Traffic via Finnish ports grew due to the increase of Russian traffic – value added logistics (VAL) became also common (Kilpelainen 2005, p 9 -10)

Finland has an important role as a middleman in the Russian high value imports. The east bound trans traffic is five times higher in value than the Finnish exports in Russia (17.7 vs. 3.5 billion euro in 2003). Together the eastbound traffic and the Finnish exports summed up

to 21.2 billion euro, which is, depending on the source of the Russian import statistics, about 30 -40 percent of the total value of the Russian imports. (Hernesniemi 2004). The closeness of Russia is a clear advantage for the South-East Finnish companies : the distance between Vaalimaa and Saint-Petersburg is only 230 km.

8) Assessment of national institutional and business environment for the particular trans-border cluster (PESTLE analysis)

PEST analysis (Russia)

PEST analysis "Political, Economic, Social, and Technological analysis" and describes a framework of macro-environmental factors used in the environmental scanning component of strategic management.

Political factors define strategic and logistic behavior of the enterprise. According to them decisions on business development, investment, financial policy, distribution etc. are made.

Legal factors bring legislative limitation in firm activity. The civil code of the Russian Federation, the tax, customs legislation and other acts are a legal basis of logistics in the country.

Economic factors define an exchange rate, a rate of inflation, change of a gross national product, rates of development of branches, labor markets, capital, supply and demand etc.

Technical and technology factors influence a level of development transport, information computer systems, and the flexible automated productions that is very important for logistics.

Social and ecological factors of the logistic environment characterize influence of a demographic situation, social needs of people, population shifts, cultural requirements, and also ecological influence of technology and transport on environment and ecological accidents on reproduction conditions. Programme of protection of environment directly influence adoption of logistic decisions.

Political

Government regulation plays a major role in development and operation of transportation. Russian government control almost entire basic infrastructure as well as many transport terminals. It also owns shares in many large logistics-related companies and sets the tariffs for railroad and pipeline transportation.

It is more important in Russia than in most countries, mainly because of the formerly exercised centrally planned economy. In the transport logistics, the most important issue is the funding of infrastructure and equipment investments. The net capital flows out of Russia, and surplus budgets, the investments have not been as high as they would need to be in a country of such a fast economic development. Sometimes politics have some effects on business.

Economic

Transport strategy of RF till 2030 is intended to achieve the goals and key indicators that are directly linked to the development of transport system^x. In order to achieve the considered target indicators Transport strategy includes the introduction of effective cargo-transport technologies, an important component of which is freight forwarding technology. These

technologies are aimed to increase the commercial speed, precision and rhythm of the supply of goods, enabling reduce the required reserves in storage for production and trade. In will be provided by the release of working capital of enterprises and increase their efficiency. For achievement of the considered target indicators Transport strategy provides introduction of the effective transport technologies, one of which important components are technologies of a transport expedition. These technologies are directed on increase in commercial speed, accuracy and rhythm of deliveries of the goods that will give the chance to lower necessary stocks in warehouses for production and trade. Liberation of current assets of the enterprises and increase of efficiency of their work will be as a result provided.

Table 2. Some indicators of Transport Strategy of Russia

	2007	2010	2015	2020	2030
Transit cargo through Russia, mln tonnes	27,9	34,2	42,7	60	100
Exports of transport services, billion \$	10,3	13,1	23,4	41	80
Increase by 2007	1	1,3	2,3	4	7,8

Source: Transport strategy of RF till 2030

Improving the quality of transport services, accuracy, timeliness and reliability of supply will provide a more attractive environment for the transit of goods through the territory of the country and export expansion transport services. The increase in the commercial rate will provide accelerated turnover and margin improvement of transportation systems. acceleration of a turn and increase in profitability of transport systems. The result will be an increase in budget revenues from tax deductions for transport and freight forwarding companies. The general need for logistics will increase also along with the general development of the Russian economy. Moving from raw materials and bulk products to more complex ones and cutting the manufacturing costs create a need for efficient logistical services. Growing economy also demands complex machinery, which makes a large part of Russia's import with around 80% of machinery in Russia being imported.

Social

Growth of employment of the population in the sphere of logistics is connected with population growth in the large cities, Moscow and Sankt-Petersburg

Technical

Use of computer equipment and the modern software allows to improve considerably speed and quality of administrative decisions. The current state of logistics and its development was in many respects created thanks to rapid development and introduction to all spheres of business of information technologies. Realization of the majority of logistic concepts (systems) such as SDP, JIT, DDT, and others would be impossible without use of high-speed

computers, local computer networks, telecommunication systems and the information software.

The center of technical researches of Russia of VTT is engaged in studying of cargo transportation between Russia and Finland. Results show that improvement of a cargo transportation requires development of processes of information processing about logistics and increase of extent of automation. Introduction of systems of contactless radio-frequency identifiers will have beneficial impact on work of all chain of supply, consumers, and also on activity of government bodies on border between two countries. For their development it is required to provide cooperation and the agreement concerning application of various standards differing from each other and programs.

Legal

Inability of the Russian forwarding agents to provide the requirement of domestic and foreign consignors is connected with problems of legal character: the customs, tax and tariff legislation of the Russian Federation doesn't correspond to the international standards.

Ecological

Table 3. Dynamics of emissions in the atmosphere from motor transport for 2000-2008 in the city of St. Petersburg

Indicators	Years								
	2000	2001	2002	2003	2004	2005	2006	2007	2008
Number of cars. thousand pieces	35,6	44,7	55,8	67,3	79,8	94,6	113,8	133,8	151,8
In total it is released into the atmosphere polluting substances, one thousand tons/years	30,7	28,6	35,7	43,05	61,0	61,6	68,6	78,9	87,65
Contribution of transport to total emission, (%)	37,7	40,7	50,2	53,7	70,2	73,6	79,3	83,0	87,2

Source: <http://www.day-travel.ru/>

PEST analysis (Finland)

Assessment of national institutional and business environment for logistics cluster in Finland, especially Southeastern part, using so called “PESTL analysis” as a basis. This particular analysis analyzes country from five different aspects. Those aspects are political, economic, social, technological and legal aspects.

Political

In Finland, where the political situation is pretty stable, almost all of the changing factors in this field concern money. Improving e.g. the roads needs funding from the government. And all the big projects concerning road infra are competitors, and decisions are made during the budget process in the Parliament of Finland. To affect to the decision making, local operators need to do lobbying towards The Finnish Transport Agency. Maintenance of the roads, tunnels, bridges etc. can be made by decision of local Centre for Economic Development, Transport and the Environment. (Centre for Economy Development, Transport and the Environment of the Southeast Finland.) Also aviation needs funding from political decision makers, for example City of Lappeenranta pays marketing support for aviation companies which operate via Lappeenranta airport. (City of Lappeenranta; YLE Etelä-Karjala.)

Economic

In area of South-East Finland lives 314 845 inhabitants (6/2012). Around 5 000 of those are citizens of Russia. In South East Finland there 17 880 unemployed persons (6/2012) and the demographic dependency ratio was 57,4 in the end of year 2011. In whole Finland the population is appr. 5,4 million. The GDP of Finland was 35 150 euros per capita (est. 2011). In September 2012, the inflation in Finland was 2,7 %. (Tilastokeskus.)

Service and tourism industry grow rapidly in the South East Finland area. Location next to the Russian border not only increases the heavy traffic in roads but also passenger traffic. E.g. the amount of accommodation reservations increased of 40 % in a year. Also investing to new tourism attractions is growing. A big example of these investments is Holiday Club Saimaa, which was the biggest Nordic investment last year. IKEA announced its expansion to Lappeenranta, it comes together with Ikano shopping center. (TEM toimialapalvelu; Newspaper Etelä-Saimaa)

According to the Transparency International's Corruption Perceptions Index 2011, Finland is the second least corrupted country in the world - sharing the second place with Denmark. With the scale from 1 to 10, Finland got points 9.4 which means "very clean". E.g. Russia scored 2,4.

Social

There is pretty high level of education in Finland. Also big part of Finnish people have higher degree. The amount in South East Finland is a little lower compared to whole Finland. In South Karelia 23,4 % has higher degree, in Kymenlaakso the figure is 23,0 and in whole country 27,8 %. Level of knowing languages is pretty high to, students need to learn at least one foreign language and two domestic languages of Finland (usually Finnish and Sweden) during their general education. (Tilastokeskus; Ministry of Education of Finland.) Good example of operations for decreasing the border is School of Eastern Finland, which operates now in three cities in South East Finland (Imatra, Lappeenranta and Kotka). School is private but free school for Finnish students who want to study Russian language and culture and for immigrants from Russia.

Emeritus Professor Geert Hofstede has described countries with five dimensions. According to the results Finland scored with scale 1-100 as follows: power distance 33, individualism 63, masculinity/femininity 26, uncertainty avoidance 59 and long-term orientation 45. These dimensions prescribe Finnish people in work and home life well^{xi}.

Technological

There still are investments in "old" industries in South East Finland despite the decreasing amount of employees in the field. For example UPM just invested to bio refinery in Lappeenranta.

Lappeenranta University of Technology has put huge effort to research and development in energy field. Also Saimaa and Kymenlaakso Universities of Applied Sciences do their part in applied research in their own fields of knowhow. (Ministry of Employment and the Economy). LUT, Saimia and KyAMK do scientific and applied research also in logistics area. Material made in NORDI (LUT's Northern dimension research center) has also been used in this survey. There are also few national/communal centers which fund cities' and universities' research.

In the governments investment list there are at least two bigger projects in South East Finland: improvement of E18 road and motorway from Taavetti to Imatra. Also fusion of Kotka and Hamina harbours was successful, the new KotkaHamina-harbour made records in

traffic amount. There are also plans in developing railways, at least building a double railway from Imatra to Luumäki to answer the growing demand for moving goods also via rails. (Ministry of Employment and the Economy.)

Legal

Finland is a member of the European Union and the Schengen area. Lots of laws and regulations come from the union, and rest from the government. There are no law- or regulation-making organs in cities or regions. Finnish administrative authorities help new businesses in Finland. (The Centre for Economy Development, Transport and the Environment).

Still, despite the help that authorities given to foreign businesses, there are some barriers that come out while doing business with Finland. These arguments are based on survey made by Ministry of Foreign Affairs for companies working in international business. Many of the barriers have something to do with customs, especially when importing from Russia. Regulations aren't always clear and the paperwork feels heavy. There's some differences between tariffs in Finland and other EU-countries.

9) Factor analysis: opportunities and constraints for the particular trans-border cluster to grow (joint part)

Factor analysis (Russia and Finland)

Factor conditions should be divided into basic and advanced factors. The stronger the advanced factors in an industry are, the more competitive the firms in this industry are. Without appropriate advanced factor conditions, firms would have to expend their own resources to provide such structures for commerce.

The advanced factors for logistics are appropriate infrastructure; access to trucks, ships, trains and other machinery; qualified workforce etc. Without appropriate advanced factor conditions, firms would have to expend their own re-sources to provide such structures for commerce.

The development of infrastructure is decisive factors in development of logistic cooperation. Here it is possible to consider the main ways of movement of freights between two countries (ports, roads).

Russian ports:

1.Port of Saint-Petersburg www.seaport.spb.ru

Sea Port of Saint-Petersburg is a full service year round, 24 hours a day. Accepted for processing all kinds of goods, including non-standard heavy or large loads. More than 2,000 companies from Russia, CIS countries and abroad choose a company group Sea Port of Saint-Petersburg. Success factors - skilled labor, modern technical equipment, high handling, convenient location and infrastructure areas.

2.Port of Vyborg www.port-vyborg.ru

Vyborg Port is a universal small port with capacity 3m tonnes cargo. The Port is located in the North-East part of Finnish Gulf, in 113km from St.-Petersburg near Finnish border. North harbour of the port is connected with Lake Saimaa by Saimaa channel, located on the Finish territory.

Cargo comes to Vyborg Port by sea and river vessels, auto and railway transport. Port specialization: handling different types of general, bulk (fertilizers, coal, ore, iron, metal scrap), food and chemical bulk cargoes. During Summer navigation Port accepts passenger vessels.

Finnish ports:

1. Port of Helsinki / Port of Helsinki www.portofhelsinki.fi

Port of Helsinki - Finland's main port, covering trailer, container, vehicle, and passenger transportation.

In 2008, in Helsinki, opened a new first class shipping port Vuosaari area equipped with modern logistics and transit. The port is a major hub for international goods that are imported and exported from the country, as well as a transit point.

2. HaminaKotka Port / Port of HaminaKotka Ltd. www.haminakotka.fi

JSC "Port HaminaKotka" - one of the largest sea ports in Finland. Universal Port provides a full range of services to handle all types of cargo. The port includes: a container terminal, Terminal RoRo, terminals and liquid bulk cargo terminal normal and heavy loads. The port also provides a wide range of additional services.

Roads:

E18 — the European automobile route passing from Craigavon to Northern Ireland through Great Britain, Norway, Sweden and Finland to Russia. Length of a route makes about 1890 km (1174 miles).

In usual days load of Road E18 to Helsinki is insignificant. On it is possible to go with the maximum speed of 120 km/h allowed in the country in the summer and 100 km/h in the winter. The cost of the Finnish highways is estimated in 15 billion euro. From the Finnish motorists Finland annually collects seven billion euro taxes and payments. Ten percent from them go on construction and maintenance of road networks. The average cost of construction of one kilometer of the high-speed highway (without bridges and tunnels) makes 3-5 million euros^{xiii}.

Chain of deliveries

Leading companies understand today and support the concept of a chain of the deliveries, beyond their business. The essence of the analysis of chains of deliveries is reduced to the following provisions:

- the cost of goods is formed throughout all chain of deliveries, affecting critical image only the last stage — a stage of sale to the end user;
- overall effectiveness of operations affects critical image goods cost on point of concrete sale on all chain of deliveries;
- from the point of view of cost initial stages of production of goods, and the most sensitive
- the last stages of sales are the most operated.

The opportunities:

Russia is a young growing market with enormous market and large work force that needs a lot of investments. Finland has a well establishment logistics infra-Structure with high quality service. Opportunities depend on the available funds and the correct selection of the sector to be served by logistics to integrate with Russian-Finnish logistics chain. It is important to study the related industries very well so maximize the profit.

Competitiveness Issues:

Partnerships and networks must be created and utilized more in order to develop competitiveness. Collaboration with the excellent Finnish universities should be increased. Also collaboration among companies should increase from the present state.

Finland is neighbor country and Finland cooperation with Russia refers even to the period of USSR. The total population of Russian European part is 95 million which makes good target for logistics services. The existence of infrastructure for logistics in north western part of Russia, As Russia inherited most of the USSR former capabilities.

Railroads are ahead of the other transportation modes in terms of competitiveness. Railroads are the traditional, largest and most reachable transportation mode in Russia. Moreover, the utilization of the Trans-Siberian Railroad will increase the overall competitiveness of railroads.

The constraints are:

The conflicts in legislation between Finland and Russia. More strict legislations on foreign companies in Russia. The role of the Russian government is quite important. It is more important in Russia than in most countries, mainly because of the formerly exercised centrally planned economy. In the transport logistics, the most important issue is the funding of infrastructure and equipment investments. The net capital flows out of Russia, and surplus budgets, the investments have not been as high as they would need to be in a country of such a fast economic development.

Sometimes politics have some effects on business (we hope for stable political relations between Finland and Russia which will generate stable environment for business cooperation). Warehouses need to be developed better in Russia and with more capacity. The need to build more roads and to enhance the capacity of the existed ones. The need to integrate IT better in Russian logistics systems so it can help to facilitate logistics operations.

Lack of investments and aging, congestions, and the state ownership can be listed as negative sides of railroads which is one of the most common way of transportation and cheap at the same time.

The other transportation modes, road, sea and inland, and air transportation as “potentially competitive”. All these suffer from aging due to low investment levels. Road transportation is going to increase its share because of its flexibility. Sea and inland water transportation will benefit from their cost structures if the infrastructure is renewed properly. Air traffic will increase in general and the possibility of using Russia’s airspace as a route for global flights connecting Europe and Asia will accelerate the volumes. But the infrastructure is, once again, significantly old.

The factors of development of trans-border cluster

- 1) the participation of companies in the business outside their country (the search for the best options of delivery, storage, distribution and marketing of its products)
- 2) increase of requirements to the quality of the processes of distribution of products (the quality of the goods, terms of performance of orders, supply schedules, product range, production cost)
- 3) computerization of management of logistics processes (creation of applied software systems, which automate the processes of planning, forecasting, decision-making, database management, the solution of optimization problems)
- 4) The unification of rules and norms of foreign economic activity, standardization of parameters of technical facilities in different countries

- 5) The integration of production, storage and transport processes, including the work with the raw materials and finished products
- 6) Support of state and scientific-research institutes

Finland and Russia have always been close, but a new wave of Finnish investment points to accelerated cooperation between the two countries, with St. Petersburg perfectly placed to take advantage. Compared to other foreign investors Finns say they boast special knowledge of the local market and experience of dealing with both the local business community and the city's administration.

The concept of "Russian opportunity" can be characterized as Finland's third pole of economic development, after the pulp and paper industry and information technology, said Jussi Hyoty, chief economist with the FIM Group at a presentation in Helsinki last week. "Russian opportunity is gathering speed, and is currently one of the strengths of the Finnish stock market", he added^{xiii}.

10) Cluster analysis (supply chains, access to resources, demand and supply) – roles of Russian and Finnish enterprises (joint part)

Transport and logistics clusters - territorial clusters, which include a range of infrastructure and companies, specializing in the storage, maintenance and delivery of cargoes and passengers. A cluster may also include organizations serving the facilities of the port infrastructure, the companies specializing on sea, river, land, air traffic, logistic complexes and others. Transport and logistics clusters are developing in the regions with significant transit potential.

Tiralana

Tiralana is a modern company established in 2000 and registered in Finland. During its business activities Tiralana has developed a worldwide partnership network of companies and forwarding agents that enabled it to provide a full range of high-quality logistic services in transportation of export-import and transit goods. Tiralana's main specialization is shipment of goods in ISO containers by all means of transport: sea, rail and road as well as terminal handling and storage of goods in own warehouses in Finnish port of Kotka.

Thanks to constant efforts of its employees Tiralana has proved itself as a reliable partner and as a forwarding company of international standards. In accordance with its international status Tiralana has become recently a member of International and National forwarding organizations.

Company render following services for transportation by sea:

- booking of space on vessel and positioning empty container to shipper for stuffing;
- consolidation of small consignments of different shippers into full container load;
- container tracking while its movement;
- 4 days advice of container's arrival in port of destination;

- cargo storage in a specially equipped warehouse in port of loading/discharging;
- sorting of LCL cargoes in separate consignment;
- complete handling of containers in port of destination;
- address substitution of cargoes in transit.

Road transport is, as a rule, the last link in the chain of multimodal transportation, allowing goods to be delivered practically to any point of destination. Tiralana uses truck fleet consisting of tented trailers, container chassis, jumbo trucks with capacity of up to 170 cbm, trucks for carriage hazardous and temperature controlled goods^{xiv}. Tiralana can arrange direct trucking of foreign trade goods from West European states to Russia and CIS countries and vice versa. Tiralana is able to work out optimal routes and to deliver client's goods in time and at reasonable cost with strict observation of international and national legal requirements.

Tiralana is a forwarding company with its head office in Moscow. In its scope of business Tiralana render "door-to-door" delivery services with its own stock of 40'/40' HQ containers, providing export-import and transit multimodal transportations. Company has long time experience in the field of container traffic arrangement for LCL goods "door-to-door" including customs clearance in Russia particular in Moscow. Wide network of our agents make it possible to provide regular shipment of LCL goods all over the world. Tiralana provides regular shipments of consolidated goods and arranges transportation and project forwarding services.

The main activities of Tiralana are warehousing and forwarding services in Finland, arrangement of multimodal container shipments to Russia and CIS countries via Finnish ports. Tiralana has two own modern bonded warehouses conveniently located near to Mussalo Container Terminal in Kotka.

Company CHS

CHS Logistics is a Finnish third party logistics company operating in international logistics, warehousing, supply chain management and forwarding services. CHS Logistics offers individual solutions for domestic and international clients, taking advantage of the unique location of our warehouse situated in Lappeenranta Free Zone close to the Finnish Russian border crossing and customs office.

CHS is a privately owned Finnish logistics company operating in international logistics, transportation, warehousing, supply chain management, forwarding services including customs clearance. CHS also offers specialized logistics services such as furniture logistics, exhibition logistics, culture logistics and technical distribution. CHS has special expertise in logistics services related to Russia and CIS countries.

The warehousing activities of CHS are handled in three locations in Finland: Kotka, Lappeenranta and Forssa. CHS Lappeenranta warehouse area is located in the Port of Mustola at the Lappeenranta Free Zone Area and it is situated only 20 km from the Finnish/Russian border crossing in Nuijamaa. CHS warehouse in Lappeenranta consists of 47 000 m² of warehouse space^{xv}.

The Port of Mustola is also one of the terminal places for the Trans-Siberian railway connection. We have a direct railway line to our covered warehouse ramp, which ensures reloading in all weather conditions.

CHS Kotka warehouse is located in the Port of Kotka, which is the major port for import to Finland and Russia. CHS warehouse in Kotka consists of 12 000m² of warehouse space. CHS Retail warehouse is located in Forssa. CHS Forssa logistics center is represented by 5 000 m² of warehouse space.

Fairs and exhibitions are significant marketing events for companies and therefore it is utterly important that all elements work together. Managing the logistics related to the exhibition is often demanding and therefore the logistics provider should be experienced and professional. CHS Expo Freight is both. Our staff has many years of experience in handling these challenging tasks.

CHS Expo Freight has a worldwide network of selected agents and representatives. Through that network we can manage your shipments to almost any place in the world. We manage small shipments of few kilos as well as large shipments of several trailers or containers. We are independent from the multinational transportation companies and therefore we can work cost efficiently, utilizing flexibly the free transportation capacity in the market.

Apart from transportation services, we can provide a number of additional services. These include customs formalities, warehousing, delivery to the stand, co-ordination of shipments, storage of empty packages during the exhibition, manpower, courier services, supervision of shipments, etc.

Give us a call or send an e-mail and tell us about your exhibition. We help you planning the best logistic solution for your event in a cost efficient way. If you contact us well in advance, there will be more time for planning and more choice for solutions.

Cluster analysis

Needs from the forest industry in Finland have affected a lot for creation of Finnish logistics system. Heavy industry, transporting raw materials and products has made Finland the most transport intensive country in EU, comparing to population and GDP. Most of the legislation concerning logistics/transporting is EU-legislation. According to Logistics Performance Index 2012 where 155 countries were compared, Finland was number 3, so Finland is really high performer in the field.

Logistics effect to every field and industry. Large companies estimate, that logistics is around a half of their competitiveness. Logistics costs of Finnish manufacturing and trading firms are on average 12.1 % of sales, including costs incurred in overseas subsidiaries. The share of transportation costs (at 4.6 %) has slightly increased, which is mainly due the significant decline in transport costs. The industry weighted logistics costs in 2011 were € 33.1 billion in 2011, of which over half was in-house costs. Without overseas subsidiaries, total logistics costs of Finnish firms equaled 8.6 % of GDP in 2011. (Ministry of Transport and Communications). Being professional in logistics is based on education and work experience. In Finland, there's lots of education for logistics in all levels of education. In the future, there might be lack of entrepreneurs and e. g. truck drivers when today's workers retire.

There are over 8800 truck companies in Finland. This is very competed business and profitability is not very high. In rail transports there is no competition at all, because there is only one, government-own, company. There are dozens of shipping companies, part of them own only one ship. About aviation, most of the cargo is transported on passenger planes and

there is no demand for for example airports concentrated only for air cargo. (Ministry of Transport and Communications).

Trade partnerships with Russia have offered important growth opportunities for Finnish and logistics companies. Russian ports are struggling with problems such as lack of capacity and poor road and rail connections. Finland estimates that goods transport will continue through Finnish ports. The competitive advantages of the Finnish route include safety, availability of storage facilities and added value services, as well as predictable delivery times. (Ministry of Transport and Communications p. 45).

In 2011, 10.6 million travellers crossed the border between the two countries. The Border Guard estimates that the number of people crossing the border will double, or reach approximately 20 million, even without the exemption from visa requirements. Visa free travel from Russia, if realised, would raise these numbers even further. It is estimated that cross-border goods traffic will also increase in the future. (Ministry of Transport and Communications.)

Findings about the Northwest Russian Transport Logistics Cluster^{xvi}.

Russia is unique. The Soviet period left its marks on the present outlook of Russia, and the Northwest Russian transport logistics cluster is not an exception. The massive size of Russia could offer plenty of opportunities for business in general but the current economic state of Russia has forbidden the full utilization of that potential – at least up until now. At a glance the present state of the four studied transportation modes is weak. A more profound examination of the issue gives reason to assume that the railroads are ahead of the other transportation modes in terms of competitiveness. Railroads are the traditional, largest and most reachable transportation mode in Russia. Moreover, the utilization of the Trans-Siberian Railroad will increase the overall competitiveness of railroads. Lack of investments and aging, congestions, and the state ownership can be listed as negative sides of railroads.

The author categorizes the other transportation modes, road, sea and inland, and air transportation as “potentially competitive”. All these suffer from aging due to low investment levels. Road transportation is going to increase its share because of its flexibility. Sea and inland water transportation will benefit from their cost structures if the infrastructure is renewed properly. Air traffic will increase in general and the possibility of using Russia’s airspace as a route for global flights connecting Europe and Asia will accelerate the volumes. But the infrastructure is, once again, significantly old.

The role of the Russian government is quite important. The author would say that it is more important in Russia than in most countries, mainly because of the formerly exercised centrally planned economy. In the transport logistics, the most important issue is the funding of infrastructure and equipment investments. Despite the positive CA, net capital flows out of Russia, and surplus budgets, the investments have not been as high as they would need to be in a country of such a fast economical development.

The other aspect related to the government is its protective policies, which are not in line with the wished membership in the WTO.

The inherited “business model” with low level of knowledge about market economy is a great burden for Russian business in general. Luckily the trend seems to be that more and more students are trained according to higher western standards. In the author’s opinion highly educated management could be useful for example in the privatization processes. These processes are not well executed in Russia, though they are quite important for Russia in order

to gain the ability to compete globally. Overall the interaction among Russian companies is only just developing – in the Soviet model the connections and partnerships were given by the central administration.

Findings of the Survey

The responses to the survey were a positive surprise. The author was told that there is some sort of barrier which prevents companies and to some extent also the institutions from telling the whole truth about their opinions on logistics relating to Russia. However, the author received good answers from both the survey and the interviews; also the response rate was satisfactory. Some of the questions received quite diverging answers, which might be due to the complicated structure and low transparency of Russian logistics.

Finnish Competitiveness Issues

Partnerships and networks must be created and utilized more in order to develop Finnish competitiveness. The author thinks that for example collaboration with the excellent Finnish universities should be increased, which is true also according to the respondents. Also collaboration among companies should increase from the present state. Another interesting point is that the EU enlargement to the Baltic States has not changed the competitive situation to the extent the author thought it would have changed. The respondents thought that Russia is still the number one competitor against Finnish companies, while in the author's opinion the Baltic States and especially Estonia should be considered as a more imminent threat.

According to the respondents, the Finnish competitive advantages do not differ much from the ones of the Baltic States. When the competitive advantages were listed, both had same kind of characteristics, including e.g. flexibility, know-how, and specialization. Of course at present the competitive environment and infrastructure are better in Finland but the author sees that in a few years Estonia and maybe Latvia will truly challenge Finland. Furthermore, the problems in sea transport in the Finnish ports caused many delays in 2005 and thus decreased the attractiveness of Finland as a transit route. These problems moved traffic to the Baltic States at least to some extent.

11) Creation of the cluster map (supporting research institutions, government institutions; support services of distributors, consumers) (joint part)

The development of clusters is kept at the state level (the Russian-Finnish logistic forums).

2009 - within the 14th International exhibition and conference on a cargo transportation, transport and "TransRussia" logistics the International Russian-Finnish forum on transport and logistics took place^{xvii}.

More than 500 companies took part in "TransRussia" from 33 countries. The international Russian-Finnish forum on transport and logistics is an important event for "TransRussia".

The main subjects is "Development of cooperation of the Russian Federation and Finland on logistics of international transport".

2011 - Forum "Possibilities of a transport corridor between Finland and the North West of the Russian Federation"^{xviii}. The forum is organized by NELI-North European Logistics Institute at University of Applied Sciences of the city of Kotka (Finland) together with the Finnish-Russian chamber of commerce.

Forum purpose:

- Identification of the most perspective options of the Russian-Finnish interaction within the organization of logistic processes of the North West of the Russian Federation for the purpose of strengthening and the most effective use of the foreign trade and transport opportunities of the North West of Russia and Finland.

- Acquaintance of representatives of the Russian and Finnish business interested in possibility of cooperation in the field of transportation and logistics.

At a forum problems of policy and logistics development between two countries were discussed.

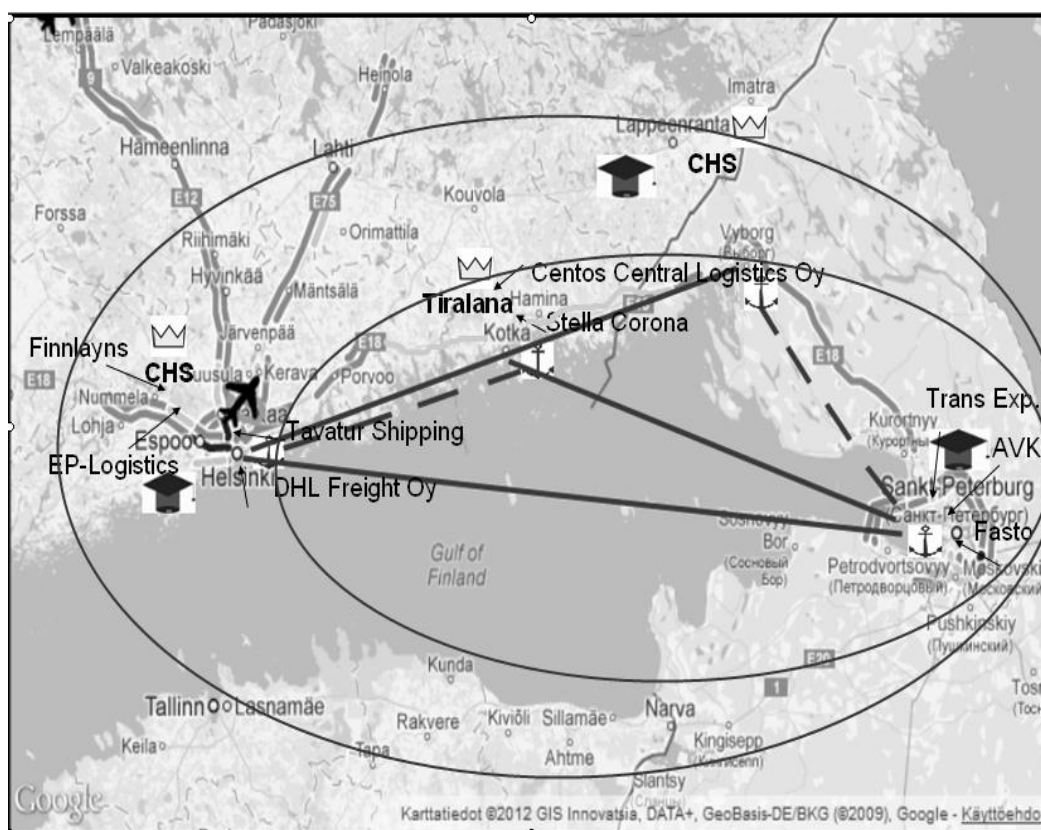
"The main export volumes of transportations from Russia to Finland consist of forest freights, components more than a half of all export", - the executive director of NP "Timber Industry Confederation of the North West" Denis Sokolov speaks. Other directions of export from our country in Suomi: iron ore (15%), chemicals (14%), oil products (12%).

Now Finland - the central logistic point of Baltic, but already today both in Russia, and in Baltic, some large ports are under construction and reconstructed. Gradually transport streams are reoriented on these directions. Finns are concerned by a situation.

"The tariff policy applied in Russia is directed on stimulation of transportations through own ports of Russia, instead of overland frontier transitions that is unprofitable to Finland, - the director general of the Railroads of Finland of Henri Kuitunen regrets. - In certain cases the overland directions are 3-4 times more expensive. As a result the total amount of direct rail transportation decreased in 2004 by 15% or for 2 million tons, and these volumes of freights still didn't return back to the railroads".

At the same time the overland customs ceases to cope with loading. Last month "record" turns in 50 km at the North Western customs of Russia were recorded.

Creation of Cluster Map



Picture 4. Cluster Map

Russian logistics companies:

1.AVK

The company provides a full range of shipping and customs clearance of goods:

1. - Customs clearance
2. - Forwarding service
3. - International freight traffic
4. - Maintenance of external activity (FEA)
5. Information retrieval and acquisition goods abroad

Head office: Saint-Petersburg

2.Trans Expedition.

The company "Trans Expedition Ltd." was founded in 1992

The company has strong relationships with several transportation companies, sea carriers, railroads, which gives the opportunity to provide a quality and competitive service to partners. As an independent shipping company, uses an unconventional approach to transportation services and customer service flows.

Head office: Saint-Petersburg

3.Fasto.

Today, trucking and shipping them to their implementation - one of the most important ways to organize business process. And when it comes to container volume, and providing for customs procedures at the border of Russia, the logistics company Fasto long and successful experience in the field.

Building a transportation and logistics process, the company has established business connections, not only in St. Petersburg, but also established a transportation between many countries of the world. Sea, road and rail transportation under the motto of "door to door" and "just in time". Such an international scale due to prevailing conditions of the consumer market in Russia. Today, a variety of shipping goods to St. Petersburg is not only for the domestic market, but also for transport to Europe and CIS countries.

In fact, in St. Petersburg, a unique international transport and logistics complex services, which is of great importance for the development of importers and exporters of various regions. And naturally, Fasto not fail to take advantage of its geographical advantage and organized transportation in Russia and in the CIS countries.

Head office: Saint-Petersburg

Governmental organizations

Ministry of transport of the Russian Federation

The Ministry of Transport of the Russian Federation is federal executive authority in the field of the transport, carrying out functions on development of a state policy and standard legal regulation in the sphere of civil aviation, use of air space and air navigation service of users of air space of the Russian Federation, aerospace search and rescue, sea (including seaports, except ports of fishery collective farms), internal water, railway, automobile, city electric (including the subway) and industrial transport, and also road economy^{xix}.

The transport system of Russia is the most important component of production infrastructure, and its development - one of priority problems of the state activity. Creation of dynamically developing, steadily functioning and balanced national transport system is a necessary condition of lifting of economy. Development and modernization of the sphere of transport

are the factors stimulating social and economic development of the country, increase of the standard of living, strengthening its federalism and territorial integrity. The international cooperation is carried out at the level of carrying out forums.

Federal Highway Agency

The Federal Highway Agency is the federal executive authority which is carrying out functions on rendering the state services and management of the state property in the sphere of the motor transport and road economy, including in the field of the accounting of highways, and also function on rendering the state services in the field of ensuring transport safety in this sphere^{xx}.

The Federal Highway Agency carries out powers of competent authority in the field of the motor transport and road economy on implementation of the obligations following from international treaties of the Russian Federation, regarding performance of functions on rendering the state services and management of the state property.

The Federal Highway Agency is under authority of the Ministry of Transport of the Russian Federation.

Research institutions

The international center of logistics of National Research University – the Higher school of economy

The international center of logistics is the leader in Russia and CIS countries the center of preparation of highly qualified personnel for logistics and management of chains of deliveries (Supply Chain Management – SCM). Now the Center carries out personnel preparation on a wide range of programs. The majority of the programs offered by ICL, including all long and elite programs of training on logistics and SCM, isn't realized more by any training structure in Russia and the CIS^{xxi}. For 2012 in The international center of logistics more than 4000 people - representatives about two thousand domestic-owned and foreign firms and the organizations working at the Russian market were trained and study. Perhaps, there is no large company of oil and gas extraction branch, ferrous and nonferrous metallurgy, automobile building plants, the enterprises of mechanical engineering, the telecommunication companies, large distributors and network retail operators, and also the logistic companies which personnel wouldn't pass training in ICL.

In the Center the best professorial shots on logistics in Russia today are collected. Logistics specialists and SCM of the advanced firms, the large consulting and information companies participate in carrying out occupations. Contracts on cooperation with Lukoil, Oil Company Rosneft, TNK-BP companies, KAMAZ, by SAP AG, IBM, Microsoft Business Solution, i2 CIS, the National logistic company (Itella), and also JSC RZhd, First Freight Company, Independent transport company, the Union of metallurgists of Russia, Guild of logistic operators on joint promotion of training programs and development of systems of support of decision-making on logistics and management of chains of deliveries are signed.

ICL is the member of the European logistic association (ELA) since 2001. Leading foreign experts and professors constantly are involved in classes in long and elite programs from universities, the large training centers and the logistic companies of the USA, Great Britain, Germany, Finland, Sweden, Holland, Poland.

On the middle of 2009 specialists of the Center executed over 60 logistic projects, including according to demands of the Ministry of Education and Science of the Russian Federation, the Ministry of transport of the Russian Federation, Department of science and industrial policy of the Government of Moscow, Association of economic interaction of territories of

the Northwest region of Russia, and also such large companies as JSC GAZPROM, Russian Aluminum Management, M. Video, the Commune of Paris and many others. The center prepares and realizes corporate programs of training and seminars on logistics and SCM according to demands of the companies. Among unique services ICL express examination of the companies on logistics, testing and staff recruitment of services of logistics of the companies, the European three-level certification of logisticians.

Finland

Finnish logistics companies:

1. Stella Corona Oy Ltd

International Logistics Company, a member of the group of companies Stella Group. The company offers all types of shipping: container, general cargo, trailer transport. And also: a full range of services in the port, cargo tracking in real-time warehousing and storage logistics in the port of Kotka-Hamina, services for registration of documents and security, transportation of goods transported by truck: local and international traffic. Among the company's customers: Gazprom / NordStream - logistics concepts pipeline, Kotka, Finland

2. Finnlayns / Finnlines

Finnlines is the leading provider of Ro-Ro and passenger services between Finland and Germany, Finland and Poland, Denmark, the west coast of Sweden, the United Kingdom, the Benelux countries. Being part of Grimaldi Group, Finnlines offers liner traffic in all directions, on the Mediterranean, to the coast of West Africa, the Atlantic, and North and South America. Finnlines also coordinates transportation via Antwerp and Helsinki directly to the port of St. Petersburg.

3. Steveko / Steveco

Steveco is the leading Finnish port operator in the field of freight forwarding and transit traffic between Finland and Russia. The company operates in a number of ports and cities in southern Finland. Russia - a priority and docking station for Steveco Logistics.

Company's services in Russia: handling, storage in St. Petersburg and Moscow (terminal Skanbumaga), distribution services from South River Port in Moscow and throughout Russia, freight forwarding, road, rail and river transport of imported and exported goods and services to customers and transit customers outside of Russia.

4. DHL Freight Oy (Finland)

DHL - the leader in effective coordination and movement of heavy loads on the world. Company's size and experience allow us to create competitive offers to customers. The company has rich experience in the express delivery, sea, air and land transport, delivery, international mail, logistics and supply chain, combined with an understanding of the features and capabilities of the regional markets of the transport network, deployed around the world. DHL's network covers more than 220 countries worldwide.

5. Centos Central Logistics Oy

The purpose is to provide quality and comprehensive warehousing services. The company offers its customers rent modern warehouse and office space, as well as the full range of related services, such as loading and unloading using a full range of modern technology, custody services, services for the protection of warehouse and office space, a daily inventory, repackaging goods, compliance FIFO when ordering.

6. South East Loading / South East Loading

South East Loading Oy offers effective warehousing and handling of goods to customers. The company's services include the processing of cargo, which continues on his way to Russia. Active cooperation between South East Loading partners enables delivery of a wide range of transportation services, documentation for export and import, customs clearance and warehousing services in Finland and Russia.

7. Easmar Oy

Easmar Logistics Oy - a reliable logistics company that offers a full cycle of the transport chain "door to door" and provides transportation services for the design and bulk goods by rail and road. Digging works with all types of cars and platforms. Easmar Oy offers customized solutions for the marine and land transportation throughout the world. The company's goal - to save time and labor of our customers by offering them a skilled and competitive logistics solutions.

8. EP-Logistics Oy

The company's activity is the development of strategies and technologies, improving production practices for different areas of trade, industry, ports. Services include pre-assessment and analysis, production planning and control of the projects. The company also offers: Research and improvement of logistics, Information technology in logistics, and Simulation of the proposed system. Among the clients: Atria, Ruukki, Kone, Stockmann, Onninen

9. Tavatur Shipping

The company has a network of offices around the world and offers services in the field of logistics and warehousing, shipping, air transportation. There is a shipping LCL - cargo from ports of the world to Finland and back napravlenii. Kompaniya has its own warehouse on the outskirts of Helsinki, has loading / unloading of containers and their storage. The company's staff also serves clients in Russian.

Governmental organizations

Ministry of Transport and Communications

The Ministry dates back to 1892, when a transport system committee was set up in the Senate of Finland, then an autonomous Grand Duchy of the Russian empire. The committee later became the Ministry of Transport and Public Works which was further divided into the Ministry of Labour and the Ministry of Transport and Communications in 1970.

The Ministry of Transport and Communications is responsible for two broad sectors: transport policy and communications policy. In the transport sector, the Ministry's responsibilities include transport systems and networks, transport of people and goods, traffic safety, and issues relating to climate and the environment. In the communications sector, the Ministry takes care of issues relating to communications networks, information security and data protection, information society policy, the mass media, and postal services.

The Ministry of Transport and Communications has two ministers: the Minister of Transport and the Minister of Housing and Communications. The highest-ranking permanent official at the Ministry is the Permanent Secretary. The Ministry of Transport and Communications employs some 170 people and has three departments: the Transport Policy Department, the Communications Policy Department and the Administration Department which are subdivided into units. The Ministry's Press and Information Unit, Internal Audit and Controller work directly under the senior management.

Finnish Transport Agency

The Finnish Transport Agency is a government agency operating under the Ministry of Transport and Communications, and it is responsible for maintaining and developing the standard of service in the transport system's traffic lanes overseen by the government. Agency's tasks are for example to maintain and develop the traffic system jointly with the other actors in the field; to direct the road maintenance operations of the regional centers for economic development, transport and the environment; to develop and promote transport services and the functioning of the markets for them and to improve the performance of transport infrastructure management.

Centre for Economic Development, Transport and the Environment

The Centers for Economic Development, Transport and the Environment manage the regional implementation and development tasks of the state administration. They have three areas of responsibility and transport and infrastructure is one of them. The following duties are handled under the Transport and Infrastructure area of responsibility: road maintenance, road projects, transport system management, public transport, island traffic, traffic safety, transport permits, traffic management, assessment of basic transport services and traffic customer service.

Research institutions

Lappeenranta University of Technology

Lappeenranta University of Technology (LUT) conducts research with the aim to produce new knowledge and train professionals to meet the needs of society and industry. The expertise of LUT's researchers is based on in-depth mastery of theory and practically oriented experimental work in state-of-the-art laboratories. Research at Lappeenranta University of Technology emphasises the areas of strength defined in the university's strategy. Business and industry representatives are involved in nearly all research projects. There are several research units in LUT. This field can be researched in many of them, for example in Northern Dimension Research Centre (NORDI), in South Karelian Institute or in faculty of businesses' unit Supply Management. LUT's research results have also been used in this project work. (Lappeenranta University of Technology)

Universities of Applied Sciences

There are two universities of applied sciences in southeastern Finland - Saimaa and Kymenlaakso. The research work is more applied. Kymenlaakso University of Applied Sciences has also degree programmes of logistics, for example Double Degree Programme in Industrial Management and Logistics. Last Bachelors of Engineering in Logistics from Saimaa University of Applied Sciences graduated recently. (Saimaa and Kymenlaakso Universities of Applied Sciences)

12) Cluster diamond model

Possible Business Models

The growth figures of the Russian economy have been great; one of the main reasons is that Russia has benefited from the rise of global oil prices. While Russia is overall still quite poor when it comes to the average figures (for example the GDP per capita), there are still a lot of middle and upper class people whose incomes are high – also when measured by western standards. These people demand quality products which are usually manufactured abroad, for

example electronic equipment from Asia and cars from Europe. Because Russia does not yet have enough infrastructure to handle the imports appropriately, the role of Finland as a middleman and a mentor can be utilized for now. Also the normal trade between Finland and Russia has grown again and it seems that Russia might take the first place as Finland's leading trading partner in the very near future.

The development of Russia means that its own production will be able to compete against Finnish products, thus diminishing the currently increasing Finnish exports. However, the Finnish exports in more complicated products, like telecommunication equipment, are likely to continue growing. The Russian imports of modern cars and Asian electronics belong to the same group. As a consequence of this, the transit traffic of more valued products will continue to Russia. While the Baltic States are specialized in bulk transit traffic, the transit traffic via Finland will continue if the operations are kept competitive. Because of the higher cost structure, the Finnish companies have to maintain the high level of quality in operations, which will compensate for the higher prices. The author has come up with two business models for the Finnish logistics operations related to the Russian markets. The Finnish companies could try to specialize themselves into VAL services. However, the more attractive choice would be to affiliate into current Russian logistics chains or to establish new ones.

If the operations are continued in Finland also in the future, some changes must be done in order to maintain the competitiveness. Collaboration is one of the key elements in this, but it would also be good to consider building a free economic zone (FEZ) on the border between Finland and Russia. This way the customs operations could be eased and the costs of operations could be lowered. The author thinks that the case of a FEZ should be studied thoroughly to avoid any possible pitfalls before utilizing it. When Russia develops enough, this FEZ arrangement could be abandoned if it does not provide some clear advantages for both parties.

The author sees, however, that going to Russia would be the most profitable business model. Although there are various risks with quite high probabilities, the size and potential of the Russian markets are too vast to be abandoned from the investment plans. Finnish logistics SMEs could offer valuable partnerships to larger international logistics enterprises. With the help of Finnish know-how and the adequate resources of an international company, the outcome could be fertile. The author also thinks that the country level an interesting partner for Finland could be Sweden. Finland and Sweden combined would cover a quite large share of the Russian imports and thus the collaboration could be useful for both parties.

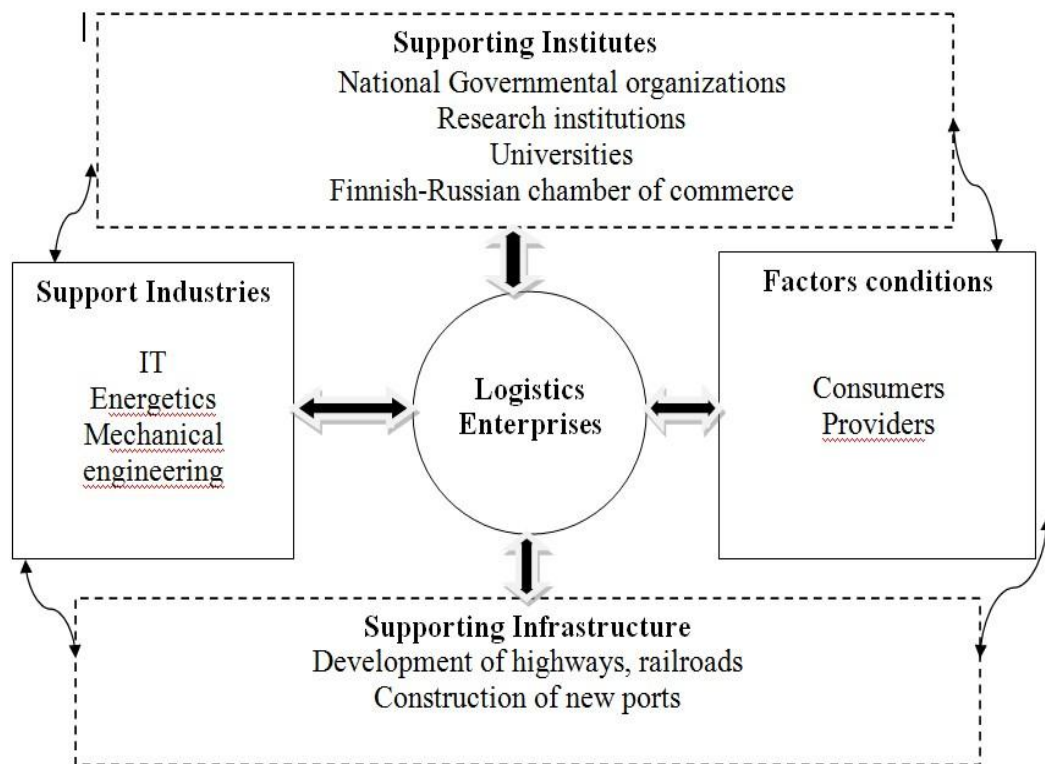
The author thinks that there are two profitable logistics business opportunities for Finnish companies in Russia. The first one is to utilize the currently held know-how of VAL services by establishing a logistics company in Russia and thus benefiting from the cheap labor force. The second one is to affiliate into the Russian logistics chains and start to manage them in a competitive way. Both these models are not easy to execute. But if a company manages to do so, the potential of Russian markets will guarantee extensive opportunities.

Creation of Cluster Model

When forming cluster model we consider the following factors:

1. Supporting institutes are decisive factor in activity of a logistic cluster (infrastructure development by the state, training of highly educated logisticians).

2. Support Industries are important for logistics for ensuring effective transportation and reduction of the general expenses for cluster business (access to cheap energy resources).
3. Factors conditions include demand conditions in the logistics market (need of other branches for logistic service), existence of the resources necessary for placement of freights in warehouses, transportations across roads and ports, formation of a steady chain of deliveries (development of a good route for cars).
4. Supporting infrastructure is development of railroads, construction of new Russian and Finnish ports.



Picture 5. Cluster Diamond Model

In order that this model worked, it needs to be enriched in practice with the following factors:

- core services
- goods
- technologies
- personnel
- Related industries.

The core services for this cluster is logistics which include transportation, customs clearing, warehouse storing and advanced services that fall under VAL. The main means of transportation are railway, road and sea transportation.

Possible goods that require transportation are raw round wood and more processed goods like lumber, furniture and pulp-and-paper products; metallurgical goods such as ore and rolled metal, coal and coke; complex machinery and parts; oil and gas.

Technologies are expected to be provided by Finnish companies and include high-class IT solutions for better tracking and implementation of Just in Time conception as well as know-how for management solutions.

A personnel is largely available and more cheap in Russia, also a balance must be found. Even though Finnish management possess some know-how, crucial for further development of Russia part of cluster, the knowledge of domestic market from Russian specialist is required. An important step would be to organize educational programs in Russian and Finnish universities to acquire more competent personnel.

Related and supporting industries are presented in both countries by factories building machines and essential parts for maintenance. Developed IT and telecommunication industry of Finland can drastically improve level of service.

Conclusion

In this work were considered the following problems:

- logistic competitiveness of Russia and Finland,
- factors of development of logistics in the country,
- business environment in Russia and Finland
- possibility of formation of logistic clusters between countries
- possible Cluster Diamond Model

Russian Federation the largest trade and economic partner of Finland. Partnership with Finland especially important for modernization of domestic economy, and also in promotion of joint projects in the world markets. Big reserves are available in border cooperation of both countries. Commodity turnover in recent years significantly grew - only for the first quarter 2011 - by 19 percent, having made 23 billion dollars.

According to the vice-president of Chamber of Commerce and Industry of St. Petersburg Vladimir Prokopyev, among the main barriers interfering development of logistics in Russia, the Finnish businessmen allocate insufficiently developed infrastructure on border that involves emergence of big turns. Also separately mark out difficulties in paperwork and freights.

For the solution of arising problems of effort will be accepted by both parties. As the director general of the Public customs office of Finland Tapani Erling declared, Russia and Finland at the same time work over creation of boundary infrastructure, customs and logistic terminals at the proper level, paying special attention to capacity increase. The logistics in Finland is developed more than in Russia. If compare an indicator of Logistics Performance Index it is 3rd place in the world (Finland) against 95 (Russia).

In Russia there are many foreign logistic companies which compete with the Russian companies. The best strategy for Russia to create conditions for cooperation with the Finnish companies for increase of the competitiveness. Considering that Russia was included into the WTO it is a question of creation of the Russian-Finnish logistic clusters. Partnerships and networks must be created and utilized more in order to develop Finnish competitiveness. The massive size of Russia could offer plenty of opportunities for business in general but the current economic state of Russia has forbidden the full utilization of that potential – at least

up until now. Today there are some Russian-Finnish logistic clusters (Tiralana, CHS) that can promote cooperation development in the future.

Business between Russia and Finland is promising in many areas especially in logistics and IT but the success depends on both partners to make it successful according to the discussed opportunities, constraints and suggested business model.

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26. <http://siteresources.worldbank.org>
27. <http://www.ely-keskus.fi>
28. <http://www.minedu.fi>
29. <http://www.schenker.fi>

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**ANALYSIS OF OPPORTUNITIES FOR DEVELOPING TRANS-
BORDER FINNISH-RUSSIAN CLUSTERS IN IT INDUSTRY**

Abstract

The objective of this study is to assess opportunities for development of Finish-Russian collaborations in the information technology industry. To achieve this objective, the study analyzes either international competitiveness of the industry in Russia and Finland and conditions for clustering. Economics of Russian Federation is strongly dependent on natural resources nowadays. The government of Russia has started investment of industries which are directed to modernization and diversification of well-performing industries. Special initiatives have been started to promote nanotechnology and IT. State enterprises are stimulated to include IT modernization into budgets.

Special economic zones and R&D centres have been opened to get foreign capital involved. At the same time non-government corporations are ready to invest in perspective projects of IT industry. Such new conditions have changed historical situation when main information technology markets and activities were concentrated in Moscow and Saint-Petersburg areas. Growing number of customers and points of production widen geography of IT markets.

From the other side, Finland is one of the most capable countries of supporting a strong IT production sector (according to BSA IT Industry Competitiveness Index). It has many IT companies which are not only involved in the process of automation of state and business processes inside of Finland but has international success due to innovative ideas and because of government support of IT sector. In current conditions of competitiveness at IT market worldwide, Finnish companies require affordable human resources and new markets as well. Thus, the research of development of Finnish-Russian cross border IT clusters is more than reasonable.

Introduction

Nowadays many industries considered to be global worldwide players with almost borderless markets, especially Information and Communications technology. ICT market grows and becomes to be occupied so rapidly that competition is mostly international due to necessity to serve customers around the world, not only inside of national borders. New advantages in communication technologies reduce possible complex problems, such as logistics, government restrictions and distribution problems. Globalization affects not only separate independent companies but also influences the industries and governments. The latter started

to understand that globalization brought the international competitiveness of industries, so investments into local hi-tech sphere increase national performance and improves national economy climate.

Financial crises showed that although the economy growth, sustainability of economical situation might be under serious doubt. Russia has been satisfied with economic performance recently, but productivity growth is struggling compared to increase in wages as the result of inflation, equipment and facilities capacity is considered poor from international scope standpoint.

Skills of employees are outdated often to meet modern requirements. With all these factors investment climate in Russia is unstable and it does not attract foreign investments in expected scales. So the Russian government has acknowledged the need of modernization of all industries according to modern requirements and challenges. Stock of natural resources is limited and that fact causes problems for the Russian Federation. Natural resources sourced from harder and more expensive locations currently. Thus future levels of revenues are not guaranteed. One of the key potential for Russia is the economic diversification and transformation to knowledge-based economy with the production of higher-added value goods.

Growth of wealth-being created potential for investment of ICT business in Finland from Russian side. Business orientation of Finnish IT specialists allows creating great number of small start-up companies which have tendencies to replace large-scale companies in current times of financial uncertainties. And development of small and middle business is a good ground for cross border interactions with initiatives from both Finnish and Russian markets.

The main objective of the study is to assess with international competitiveness whether or not conditions for development of Finnish-Russian clusters in IT industry are suitable.

This study is based not only on a review of relevant publications and statistics but also on information from interviews of IT specialists and form own experience. The main objective is to assemble information of initial cluster conditions and international competitiveness factors and to create a picture of the current state of the IT industry in Russia and Finland, and to analyze future potential of cross border clusters.

International competitiveness. The diamond model

The information revolution is sweeping through our economy.
 No company can escape its effect.
 Dramatic reductions in the cost of obtaining, processing,
 and transmitting information are changing the way we do business.
 (M. Porter)

The diamond model is based on four broad attributes, which determine the foundations for a location to succeed or fail in enabling creation of competitive advantages for companies located inside the area. According to Porter Location, Competition, and Economic Development: Local Clusters in a Global Economy these interdependent attributes are the following: factor conditions, demand conditions, related and supporting industries, and context for firm strategy, structure and rivalry.

In the original model of Porter (according to The competitive Advantage of Nations. The Free Press, New York, p. 127) there were also two additional external sources of competitive advantage, the role of chance and the role of the government. These four determinants together with the two external factors are considered to be an interactive system. Competitive advantage rises from the dynamic interaction of these parts, and they also reinforce each other. The government factor in this research is divided into federal and local governments as presented by Dudarev. (according to Dudarev, G. et al., 2000. Potential competitiveness of Saint Petersburg's industries. ETLA,Helsinki). Actually, the International Business Activity (IBA) can be added to the model and is presented here as a third external force (according to Penttinen, R., 1994. Timanttimallin arvostelu. Elinkeinoelämän tutkimuslaitos, Helsinki.).

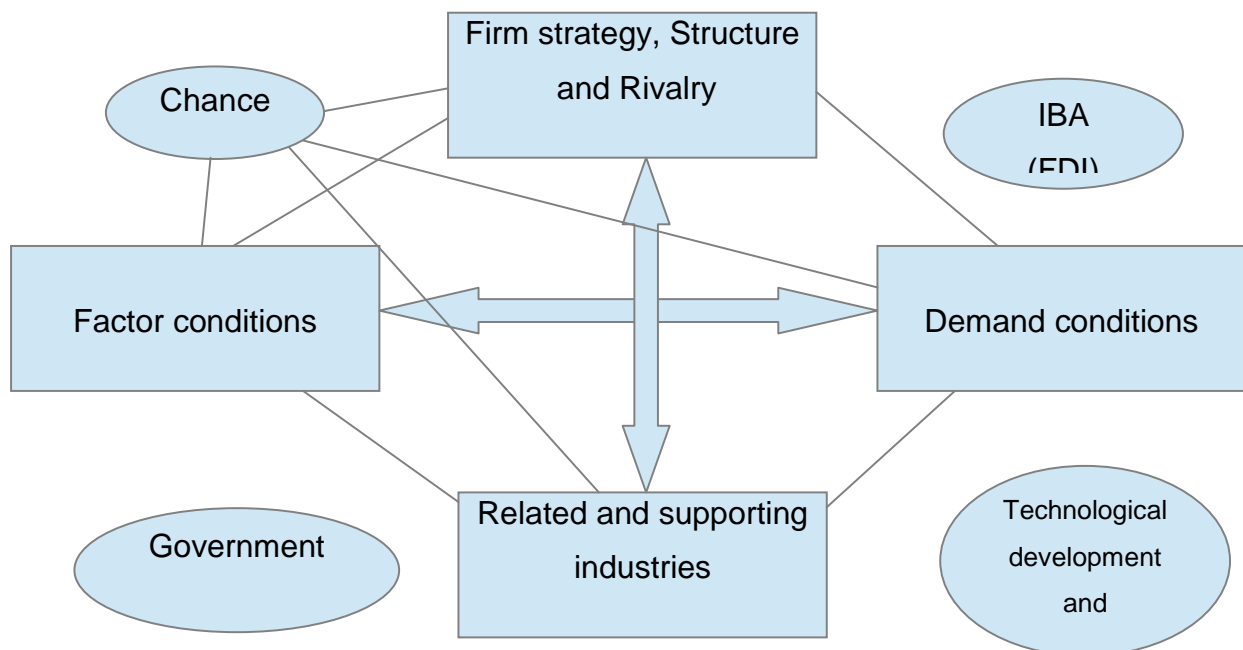


Figure 1. Russia-adjusted diamond model1 (according to Dudarev et al. 2000, p. 9; Penttinen 1994, p. 58)

Firm strategy and rivalry

It is significant for IT companies that provided products have high level of differentiation. In a global scale both Russian and Finnish markets are presented by the following segments:

- development of ordered software;
- installation and support of SW
- system integration;
- consulting;
- outsourcing of SW development;
- IT trainings and educational services.

Therewith, market share of IT services in Russia is about third part of market structure, and that fact describes its low level of maturity comparing with other IT markets, where share of IT services is more than 50 %. Analytics forecast gradual increase of this measure. According to IDC there is an important trend of changes of IT market structure in favour to share of services with high level of add value. So as result of 2010 (according to Russia IT Services 2011–2015 Forecast and 2010 Analysis, available in [www-pages of idcrussia.com](http://www-pages.idcrussia.com)):

- hardware – 35% (51% of market in 2009);
- software – 10% (26% of market in 2009);
- services – 35% (23% of market in 2009);
- other (production) – 20% .

Share of IT in GDP in Russia has reached 1.2%, there is one computer on each 9 habitant.

According to IT Industry Competitiveness Index, Russia was on the 46th place in the world ranking in 2011 and it has fallen 8 places since 2009. This is mainly due to score declines in two categories: the R&D environment and support for IT industry development. Russia ranks 12th place of the 15 Eastern European and Central Asian countries in the Index, behind Bulgaria and ahead of Ukraine.

Finland steadily ranks second place with overall score 72.

Table 1 Comparison of IT ICI of Russia and Finland

Index	Russia	Finland
Global Innovation Index		
2012	51	4
The Networked Readiness Index		
2010-2011	77	3
International Property Rights Index 2012		
1.overall	97/130	1/130
2.legal	112/130	1/130
3.physical	107/130	4/130
4.intellectual	79/130	1/130
Index of development in ICT		
2010	40	5
2011	38	5
ICT price basket		
2010-2011	31	12

For the table above were used datasheets from www-pages of: internationalpropertyrightsindex.org, weforum.org, globalinnovationindex.org.

From the point of view of the attractiveness of investments in the Russian Federation, there are still issues with the international protection of property rights (including intellectual). However, according to the ICT Development Index, Russia is successfully developing the industry, and this fact allows to implement effective international projects involving joint investments.

However, if you start a conversation on global trends in the development of information technology and its role in business, the first thing is to take into account is the analytical reports of International Data Corporation (IDC), showing the three main vectors of the industry, which are: virtualization & cloud, mobility and the explosive growth of data.

The size of the Russian market for cloud services in 2011 grew in four times (417.3%) and reached 59.4 million U.S. dollars. At the same time, experts have recorded a sharp increase in service providers of IaaS, which constituted the largest share (49.6%) of public cloud-services, the share of SaaS-solutions was 46,8%, PaaS - 3,6%. Not less impressive growth was in the segment of private clouds. Level of expenses for this type of services has reached \$ 32 million. More than 75% of this amount has had a segment of IaaS-systems. According to analysts, the market for cloud services will grow faster than the total market of IT-services

and at the end of 2016 the volume of cloud-services market will exceed \$ 460 million, showing an average annual growth rate of 50.8%.

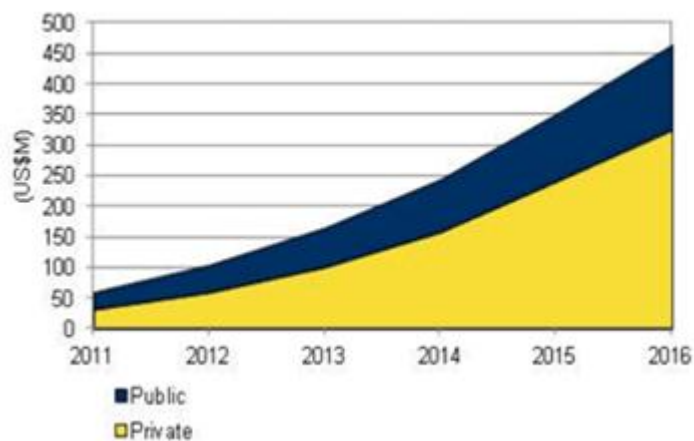


Figure 2: Market of cloud computing services. (IDC Russia Cloud Services Market 2012-2016 Forecast and 2011 Competitive Analysis)

One of the other interesting features is growth of ERP (Enterprise Resource Planning) segment in IT industry. Term ERP is usually in use for complex systems for enterprise management and planning by integration of all departments and its functions to a common software solution which can serve all needs of enterprise.

Development of ERP-systems requires a global data warehousing and access methods, which in turn gives the relevance of the issue of outsourcing of logistics services (such as cloud services). As the service of such systems requires an integrated approach to the Russian ICT market was characterized by a high prevalence of consolidation and large companies with a large market share.

This direction of IT industry holds an important part of market in Russia.

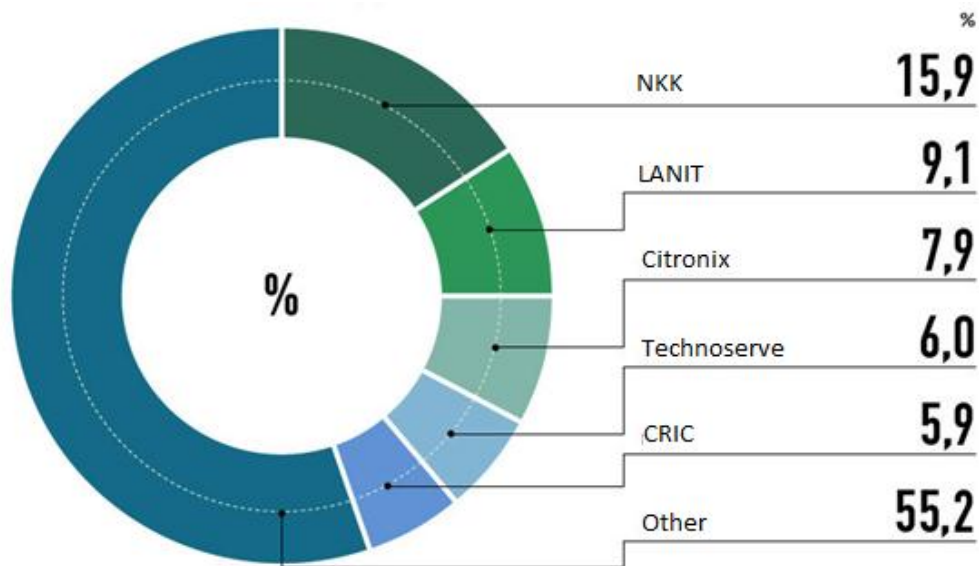


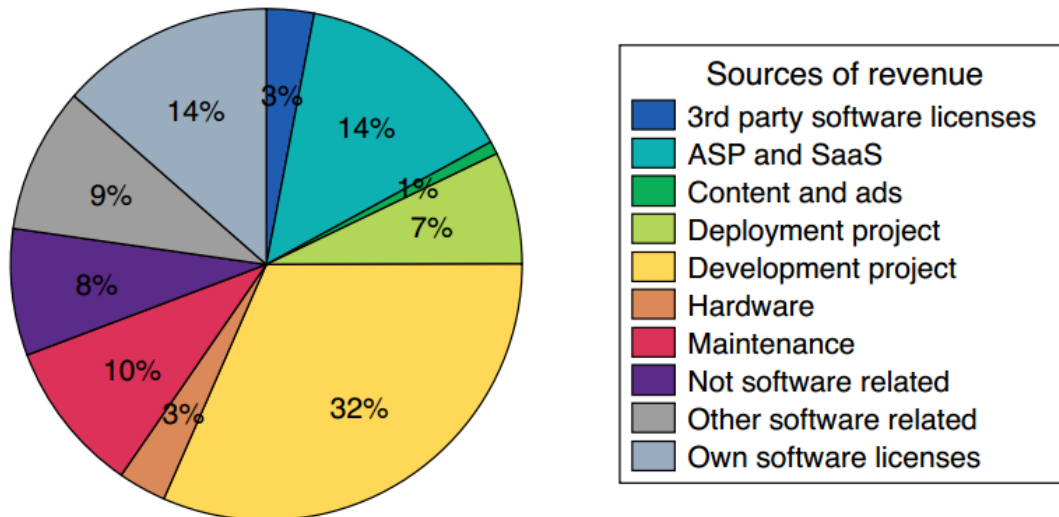
Figure 3: ICT-Russia sector leaders. (according to Digit.ru – rating of the ICT leaders in Russia, consolidation)

In 2011, the share of the ten largest companies in comparison with 2010 was unchanged at 70% of revenues of TOP-30, or 404 billion roubles (in 2010 it was 70% and 312 billion roubles).

Among the ten largest IT-companies in 2011 were: "National Computer Corporation," GK LANIT "Citronix" GC "Technoserve" CRIC, CG R-Style, SC IBS, "NVision Group", GC "Compulink" and "Kaspersky Lab". (Changes from last year touched GC "Compulink", which entered the TOP10 instead 1C, refused this year to participate in the ranking). The share of the 30 largest companies in 2011 grew 80% c to 90% of the total market. Aggregate revenues of the 30 largest companies in 2011 reached 585 billion roubles. In 2011, three regional companies were in the top 30 (two of St. Petersburg and one of Kazan), representing an increase of regional importance of the North-Western region in the field of ICT.

At the same time, the closest neighbour of this region and whole Russia as well, has one of the most propitious environments for IT industry according to IT Industry Competitiveness Index. IT industry in Finland holds leading positions at market. It places well on the European benchmarks. It is 4th in employment and 7th in revenue (IT-NEWS Magazine).

Sources of revenue are presented on the diagram:



Source: Software Industry Survey 2011; Software Industry Survey 2012

Main revenue comes from software development. According to studies (SW industry survey) the industry growth is insufficient during last years to lift the software and IT services industry as a new cornerstone of the economy. The data was provided by [www-pages of digit.ru](http://www-pages.of.digit.ru).

The largest IT companies of Finland are mainly connected with telecommunication market. Here is the list of market leaders (according to <http://www.tietoviikko.fi>):

1. Nokia
2. Data
3. TeliaSonera Finland
4. Elisa
5. Also Nordic Holding
6. Dna
7. Hewlett-Packard
8. Fujitsu Finland
9. Logica Finland
10. 3 Step IT

Leading direction for IT industry in Finland is traditionally connected with mobile solutions (according to Worldwide Mobile Phone Market Maintains Its Growth Trajectory in the Fourth Quarter Despite Soft Demand for Feature Phones, According to IDC, Business wire). Expertise in this industry is accumulated by Finnish IT specialists and technical universities and it is valued around the world.

Other main areas are development of ERP solutions as in Russia and creation of more specific systems for automation of industry processes, such as mining. Favourable conditions for IT industry are conducive for appearance of big amount of small business scale

companies, which are capturing market gradually (According to Dudarev, G. ed., Boltramovich, S., Filippov, P. & Hernesniemi, H., Advantage Northwest Russia: the new growth centre of Europe). And presence of big international market players, such as Accenture, decreases. Financial uncertainty in EU forces large companies to move point of productions to outsource areas, such as Russia, India and China. The main reason for that is a high production cost in Finland. For example, average basic salary of IT specialist in Finland is EUR 4261 (according to IT Vikko Kriisissäkin it-duunarin palkka nousee). With added fringe benefits, overtime pay and other allowances, the average total earnings should be 4,501 Euros (according to itviikko.fi). Average salary of software developers in Russia is 90000 roubles (approximately EUR 2250) (according to Vincha Julia, Developers have risen in price, Russian newspaper). Such big difference creates uncompetitive conditions for IT companies in Finland (<http://www.itviikko.fi/ihmiset-ja-ura/2012/09/07/kriisissakin-it-duunarin-palkka-nousee/201237332/7>). Thus most of IT companies are forced to internationalisation process.

Factor conditions

Most of factor conditions were considered in the analyses of the preceding paragraphs. The key points are:

- High concentration of skilled human resources in the North-West Federal District (R. Kärkkäinen);
- High capitalization of leading companies, occupying most of the ICT market in Russia and Finland;
- Easy integration of new organizations into the existing infrastructure caused by the specifics of the industry;
- Availability of interest and expertise in developing ERP-systems;
- The sharp rise in the sector of cloud technologies;
- Limitation of local market for Finnish companies;
- Desire of Russian investors to invest into foreign projects with more reliable legal environment;
- Innovative ideas and business orientation of Finnish companies;
- Difference in costs of human resources between Russia and Finland.

Demand conditions

The market power of consumers is expressed by a global target audience, which is not tied to any particular company. Any user can use any search engine, use other provider of cloud services or order development of applications from other developers, which leads to conduct research on the user's requests and needs, and put the results into action in a particular

service, which should be designed to establish long-term relationships.

More and more people in the world have access to the Internet, while more and more companies are creating web interfaces for interaction with the customers as well as on the basis of B2B cooperation, which means that the demand for IT services is growing. In these circumstances it is necessary to strengthen its position. Even staying at the same level, the company can receive each time increasing profits by increasing the number of clients. Company with a stable, established reputation will be the most reliable supplier in the eyes of users. This market power expressed suppliers. In connection with the above conditions, the competitive advantage of any IT-companies clearly expressed in the differentiation of goods and / or services, while each of the created products tend to standardize interfaces with other systems included in the value chain.

Choosing a strategy of differentiation is due to the structure of the industry in which the company competes (Porter, M.E, On competition; The microeconomic foundations of economic development). Since many companies provide similar services, and the change of the service provider shall not be serious loss to the consumer, the most important factors in determining the usefulness of the resource, will be publicly available, the quality and ease of use.

Russian market offers vast possibilities owing to the population and requirements of several industries. Comparing to Finland current state of automation of most of all main industries as well as political and social institutions is rather low. But existing demands do not condition elaboration of IT industry because of hierarchical structure of main executors of state and related customers. So majority of IT companies works as outsources points of production and demand in industry usually related to world trends, especially financial conditions in countries of potential long-term customers. Even those state companies which have own IT facilities, such as RZD (Russian railways) company, order some IT products in foreign companies, which by-turn can order development of those companies in outsource companies in Russia. In such conditions it is quite complicated to make estimation of growth of industry based on local needs.

Finnish market demands are caused by world trends in industry of mobile devices and by abilities of local industries to invest more budgets to automation and optimization of business processes. Last year the main driver for growth of IT spending was spending on tablets, smart phones, and mobile services. While this means that companies serving these markets will

most likely see growth, it also means that the growth of traditional software and IT services markets are predicted to grow at a slower pace than overall IT markets (Software Industry Survey 2012).

Related and supporting industries

IT-industry originally a purely supportive and, despite the separation that has occurred in recent decades, it is still one of the key factors in the success of each individual company. The cost of developing of specific solutions for the organization of various business processes exceeds the range of typical solutions often, but at the same time usually it is a better choice for investment.

All companies use IT technologies more or less, so the financial state of economics of country is always related with state of all IT industries (Porter, M.E. Clusters and the New Economics of Competition). During financial crisis all industries prefer to invest less part of budget into automation of process and into upgrade of document flow.

Nowadays there is a rich variety of ready solutions, so for small companies it is not necessary to be focused on ordering of specific solution when it is possible to use more typical products (<http://www.e-commerce.ru>). Thus IT companies often reflect the financial state of other industries, because financial uncertainty always creates a lack of orders.

IT industry reflects main trends of world economics and always dependent on financial ranks. Thus it might be said, that related industries are all industries which use complex business processes during productions or provision of services. Such supportive industries as IT industry cannot perform separately with investments of other industries.

External factors

External factors have been added to the diamond model to adjust it so that it can be used in the analysis of the IT industry in Russia. These factors will remain to have an influence on the whole Russian nation and its industries.

The role of chance reflects unexpected changes in the economy. These may be financial issues, political decisions, currency changes, technological discontinuities, and even wars. These may be positive or negative in terms of creating or losing competitive advantage. (Porter, M. E., 1990. p.124)

The role of government is to influence all the four main parts of the diamond. The government may have a positive or negative effect on each determinant or it can itself be influenced by some of the determinants (Porter 1990, p. 127).

International business activity may allow competitive advantage for multinational enterprises through their internationalization process and operations. The creation of international competitive advantage depends of the ability to compete globally, which nowadays involves e.g. international trade, agreements with foreign partners, or FDI. The companies with IBA are in a position to choose to locate their production or other facilities in a specific area, where most competitive advantage is available, and may benefit from several national diamonds at the same time. Foreign activities of companies have consequences on each four facets of the competitive advantage diamond, as IBA may have direct or indirect impact e.g. on domestic demand conditions, as the foreign demand conditions in other countries may influence the quality of products sold in the domestic markets.

Technological development has a central role in influencing the structure of industrial production and consumption, and international competition in general. Improving the absorptive capacity, which includes the ability to tap into the international technology pool, is considered a major driver of increased productivity (according to Goldberg, I. et al., 2007. *Fostering Knowledge Absorption in Russian Firms through Competitive Pressure* in Desai, R. & Goldberg, I. eds., 2007). Therefore, it is important to analyze productivity development in the same context. The advance of technology can refer to the stock of knowledge used in production or new production methods, which include new forms of distribution, new products with new features, new approaches to marketing, new production machinery etc.

IBA (FDI)

Clustering or agglomeration increases the potential for technology transfer, and therefore improvements in domestic technological capabilities. In addition, the presence of MNEs considered leaders in technological and capital accumulation, foster further the possibility of clustering and agglomeration in this specific location. Therefore, the development of a modern and high technology Russia and its industries in specific locations, such as IT in SPB area, are considered to be highly influenced by foreign direct investment (FDI) and, consequently, by MNEs locating in potential cluster areas. The Russian government is not necessarily able to finance all the needed investment to infrastructure, and foreign companies

may bring new knowledge and technology with them, enabling positive spillovers and therefore development and improved competitiveness of the industry. The governance structure, which is considered asymmetric, of this type of agglomeration is such that the strategic decision making power is in the hands of the MNE, which is typically a purchaser and exploiter of local inputs. Often in these cases very little technology transfer occurs between the foreign and domestic sector. Therefore, FDI-based MNE concentration to specific areas requires thorough analysis of underneath linkages and processes. (according to De Propriis, L. & Driffield, N., 2006. The importance of clusters for spillovers from foreign direct investment and technology sourcing. Cambridge Journal of Economics, vol. 30, no. 2, pp.277-291).

Assessment of national institutional and business environment for the particular trans-border cluster

SWOT (Russian Federation)

Strengths	Weaknesses
<ul style="list-style-type: none"> • Competitiveness of engineering education; • A considerable amount of domestic demand in the advanced information technology; • Russia's accession to the WTO. 	<ul style="list-style-type: none"> • Low level of implementation of IT in the public sector, social organizations, and households; • Lack of development of innovation infrastructure, export infrastructure Inform. goods and services; • Lack of development of telecommunications infrastructure; • The low level of enforcement in the field of IT, the scale distribution of pirated products; • Uneven distribution of IT by region; • Adverse tax and customs regimes; • Lack of coordination in the work of the ministries and departments, the lack of competent state management; • Inadequate legislation on public procurement; • Insufficient development of public-private partnership; • Low level of venture capital investment in the IT industry.

Opportunities	Threats
<ul style="list-style-type: none"> • State support for property rights; • Development of international scientific cooperation; • Progress in improving the protection of intellectual property; • Development of state programs of the IT industry and the use of products industry; • Strengthening the role of the state as the largest consumer IT and investor in the IT industry; • The desire of the state to support the development of technology parks and special economic zone in Russia; • Improvement of the Russian system of standardization, integration into the world system; • In the domestic market the IT industry is one of the most attractive in the Russian economy for investment. 	<ul style="list-style-type: none"> • Maintaining a high level of corruption; • Deterioration in the protection of property rights; • Low level of military-industrial complex IT innovations and achievements; • Lack of support for the strategic directions of "breakthrough" information technologies, the increasing regulatory burden and corruption; • Lack of patenting activity, the low level of accumulation of intangible capital.

SWOT (Finland)

Strengths	Weaknesses
<ul style="list-style-type: none"> • Business orientation of engineering education; • World authority of innovative software producer; • One of the best business environments in the world (according to Dukova, J. Finland Wisdom, Computerworld Russia, 2011 № 13); • European standards of business culture. 	<ul style="list-style-type: none"> • Limited local market; • High level of taxes; • High level of production cost; • Costly personnel.
Opportunities	Threats
<ul style="list-style-type: none"> • Exchange of educational services (foreign students may create basis for successful outsourcing); • Needs of neighbour countries in innovative solutions; • Growth of market of portable devices; • Common regulations for transaction inside of EU 	<ul style="list-style-type: none"> • Lack of human resources in future; • Uncertain economic situation in EU; • Lack of investments to satisfy all initiatives;

PESTLE factors (Russian Federation)

Political

1. Forcing the use of information technology at the level of the Government (E-Russia);
2. Diversification of industrial structure of exports;
3. Unavailability of public authorities for effective technology management and interaction with citizens and businesses.

Economic

1. The electronic form of tendering (Federal Law 94);
2. High proportion of giant companies in the market (global and regional);
3. The universal nature of services by leading companies (universal giants);
4. High speed of attraction of new customers (typical for the whole industry);
5. The high mobility of human resources;
6. The high concentration of highly qualified personnel in the North-West Federal District;
7. Low levels of SMEs in both the industry and the country as a whole;
8. High proportion of large companies, both domestic and foreign, forming the core of the ICT market in Russia;
9. High level of monopolization of communication networks;
10. The absence of an integrated information infrastructure and effective information support of markets for goods and services, including e-commerce.

Social

1. Providing a wide selection of goods and services to the customer;
2. An established industry;
3. The low degree of confidence during purchasing goods other than products of high technology with the purchase of IT mechanisms (e.g. e-commerce);
4. Publicity to the basic skills of information technology and increasing ICT skills Russians;
5. Sharp polarization of the population by income, which aggravates the problem of information inequality in the country.

Technological

1. The low level of technological innovation in the hardware level;
2. The high level of innovation in the software-level;

Legislative

1. WTO membership
 1. "Declaration on Electronic Commerce," WTO, 20.05.1998;
 2. "Basic Agreement on Telecommunications" WTO, 15.02.1997;
 3. "Agreement on Information Technology," WTO, 30.01.1997.
2. Electronic declaration in the Customs Union;
3. The draft law "Electronic commerce" has not been approved;
4. Program "Electronic Russia";
5. Federal Law of the Russian Federation of July 21, 2005 N 94-FZ Placing of orders for goods, works and services for state and municipal needs;
6. Federal Law "Information, Informatization and Protection of Information" from 20.02.1995, N 24-FZ;

7. Federal Law "Telecommunications" dated June 18, 2003;
8. Federal Law "Electronic digital signature" 10.01.2002 № 1-FL;
9. Federal Law "Participation in the international exchange of information" on July 4, 1996 № 85-FZ;
10. The current edition of the Civil Code (Article p3. GKRF 162) is not provided for foreign transactions in electronic form ("foreign economic transactions are conducted in writing");

Environmental

1. The absence of direct effect on the ecological situation;

PESTLE factors (Finland)

Political

1. Government provides support for forward-looking, creating regulatory incentives and funding basic research;
2. On the law level it is ensured that all citizens have possibility to the use digital services, regardless of where they live - in the city or at countryside - and the level of their income;
3. Active of effective management techniques use by public authorities and interaction with citizens and businesses (electronic invoices without signatures and seals).

Economical

1. Finland is the sixth country in the world by the number of companies identified in the list of 200 leading software vendors;
2. Finland is one of the highest Internet powers in the world - in the ranking of Internet World Stats it is on the 9th place with a penetration of 85.3% Network. This led to the fact that many large foreign companies began to place their data centers in the country - in 2011 Google opened its data center in Hamina;

Social

1. Innovative way of thinking is inextricably linked to social responsibility, as in the provision of broadband connectivity of each citizen, and in finding effective ways to protect the environment;
2. One of the world's leading ICT industry;
3. Shortage of qualified personnel in the field of ICT in Finland due to demographic decline.
4. High level of education of Finnish IT professionals;

Technological

1. High level of communication, mobile technologies and related fields (Nokia);
2. High level of high-tech manufacturing as the foundation for creation of demand for the software.

Legislative

1. Long-term implementation of state program Cloud Software Program, which

is funded by the Agency for Technology and Innovation Tekes and several companies of the ICT sector.

Environmental

1. Energy-efficient data centres, promoting efficient and sustainable use of energy and materials with a steady increase in the number of servers.

Factor analysis: opportunities and constraints for the particular trans-border cluster to grow

Based on the analysis, we can conclude about the possibility of successfully building an international cluster between Russia and Finland. However, the construction of the cluster suggests specific solutions, specializing participating companies.

In connection with the above findings, possibly two key directions of development of the ICT industry in the countries:

1. Cloud technologies;
2. ERP-systems.

Cloud technologies - technologies of data processing in which computing resources are available online to the user as an online service. The word "cloud" is present here as a metaphor, a symbol of the complex infrastructure, conceals all the technical details.

For cloud computing the most important feature is the uneven query Internet resources among users. To smooth this irregularity applies another intermediate layer - server virtualization. Thus, the load is shared between virtual servers and computers.

Cloud technology - it is one big concept, which includes a lot of different things, provide services. For example, software, infrastructure, platform, data, workplace, etc. The most important function of cloud computing is to meet the needs of users requiring remote data processing.

As in all other areas of computing, cloud computing also has both supporters and opponents. Last assure the public that the system is very unsafe. Working with cloud technologies, according to them, can lead to a large number of uncontrolled information. This, in turn, will lead to leakage and compromise user information.

There are advantages of this technology (Measuring Information Society Report 2011):

- The user does not need to worry about the performance of PC as well as about free space on disk space. With cloud computing this question is automatically removed immediately at the first stages;
- The user does not need to be spent entirely on the whole he desired product. All the more so in the future much of it may not be necessary at all to him. He only pays for the service, facilities and for only specific functions.

However, despite the peak growth of these technologies, both in Russia and in Finland, the decision cannot be a sustainable basis for the functioning of the cluster at the moment for a number of reasons:

1. Cloud computing sector is not well developed in Finland. The vast majority of calculations done using imported technology and cannot be quickly replaced by a national development (<http://www.softwareindustrysurvey.fi/ReportFinland2012.pdf>);

2. No permanent customer base due to the specificity of the use of computing power (seasonality, project orientation);

3. Maintenance of functioning of such systems requires huge material costs and can be paid back only in large companies, where the sector cannot be involved in currently unused computing power (<http://www.tieto.com>).

According to forecasts of many specialists 80% of all companies will not have own servers in 2030. That means that providers of cloud computing services will be the leaders of market after about 15 years. This fact became to be a basis for investments of the largest telecommunication companies. For example, leading European telecommunication company Deutsche Telekom, started to construct one of the biggest data centre of Europe in Magdeburg (Germany) this year.

Finland provides perfect conditions for stationing of data centres:

- Legal environment
- Safety
- Support of ICT on state level
- Weather conditions (average temperature allows to save energy for cooling)

Nowadays more and more companies do not rely on legal environment in Russia and prefer to store all business data abroad. And at the same time many Russian investors would prefer to invest money into foreign projects with long-term perspective. Such preconditions create a foundation for huge financial collaborations between Russian and Finnish ICT businesses.

Such kind of investment cannot guarantee good value of such financial indices as ROI and it is connected with big risks. But analysis of current strategies of main players at ICT market

shows that it is necessary to invest all liquid assets to infrastructure to capture today market share of tomorrow. Population of Finland cannot ensure the amount of customers and users to realize all potential of capacities of powerful data centres. That is why Russia is one of the evident candidates for interactions in this sphere.

Until cloud computing is a platform for further creation of clusters, it is necessary to refer to the ERP-systems, acting on the second place in terms of transactions, but the popular regardless of cyclical factors.

To analyze the feasibility of using these systems in Russia, where ICT development is uneven, it is necessary to study the structure of the software market (its share is increasing from year to year). ERP-systems occupy a leading position in this field in the Russian market (about 80% of software market). These systems in the Russian Federation are having a key focus in the development of its own products and further support. This fact suggests the presence of experience on the Russian side in this sphere.

In Finland, ERP-systems also have special attention, being specialized research and development in this field. For example The Academy of Finland's Research Council for Natural Sciences and Engineering in 2012 provided a grant for the study of modern concepts of these systems. Thus, the most effective and feasible to implement the core of building a cluster are the ERP-system, which leads to a cluster specialization in software development, consulting services and activities for product support. Cloud computing can perform auxiliary mechanism for the release of the necessary capacities in the participating companies.

It should be noted that the development of any modern systems is characterized by a modular approach that can speed up the creation of a single cluster of the product in a shorter time than is required by each company individually. It is possible to prevent a number of legal obstacles, such as Article 162 GKRF (see RF PESTLE analysis) using the selected mechanisms to form the basis of the cluster.

And finally one of the most apparent markets is the industry of portable devices and services. The worldwide mobile phone market grew 6.1% year over year in the fourth quarter of 2011 (4Q11), as the feature phone market declined faster than anticipated, dragging market growth down to its lowest point in over two years. According to the International Data Corporation (IDC) Worldwide Mobile Phone Tracker, vendors shipped 427.4 million units in 4Q11 compared to 402.8 million units in the fourth quarter of 2010. The 6.1% year-over-year growth was higher than IDC's forecast of 4.4% for the quarter, but weaker than the 9.3%

growth in 3Q11.

Such growth in sales of portable devices creates growth of software solutions for mobile lifestyle. Finland is one of the leading developers of mobile applications. New business ideas brings huge amount of investments to country (good example is Rovio entertainment media company). But local Finnish market cannot satisfy courageous business ideas. It is necessary to have solid markets for such solutions and support of local specialists at those markets.

Big number of start-up projects requires involving new foreign investors. Finland is very attractive country for foreign investors because of auspicious conditions for business. Legal environment and maturity of social institutes create good values of measures for advantageous ventures.

Cluster analysis– existing or possible linkages, roles of Russian and Finnish enterprises

Finnish ICT companies seek ways to enter to the Russian market. However, there are many barriers for this direction and for reverse as well. For the market of portable devices (e.g. Nokia) enter to market is being performed by export, but enter to market of ERP systems is more complicated assignment.

Resource planning of systems is specific to a country; there are no always versatile and efficient turnkey solutions, which lead to the continued need for their development and improvement. For example, common in Russian ERP 1C: Enterprise and its component parts are specific and cannot be applied with equal success in another country.

It should be mentioned, that role of government in Russian Federation is rather higher than in Finland and this fact cause need of more detailed clarification of questions of interaction with authorities. With implementation of tender system of state procurements there came an sufficient increase of demand on e-commerce, and as a result, many enterprises were forced to change their system of planning to more modern one. At the same time, this activity has provoked an increase in foundation of new companies at Russian IT market. Access to tender system hindered for Finnish companies as for all foreign companies. But with resources of cluster such facilities might be changed for teams from both sides.

Besides exchanges of expertise and lessons learned in development of ERP systems, each separate company has own facilities and most of them are differentiated according to country

of location.

For example for Russia main benefit is essentially new market for products, while building its position in an already busy market shares, the ability to withstand the market leaders in the issues of competitive advantage. For Finnish side Russia opens new large market and facilities for implementation of state procurements. That creates stable source of income for both countries.

The demand for software and ERP-system in particular, is relevant for Finland, but in contrast to Russia, this country is not only a potential market for products, but also a conductor on the Western European ICT market through stable and strong reputation of Finland in these.

The key resource in development of such systems is qualified personnel. This point requires creation of the system of training / search of specialists in that field. The most rational approach for is collaboration with existing universities in concerned countries and also creation of database for human resources for possible quick rotation in scope of cluster (e.g. for development of joint projects).

Potential sources of human resources

Russia	Finland
1. St. Petersburg State University	1. Technical University of Lappeenranta
2. St. Petersburg State University of Informational Technologies, Mechanics and Optics.	2. University of Jyvaskyla
3. St. Petersburg State Electrotechnical University	3. University of Kuopio
4. St. Petersburg State University of Aerospace Instrumentation	4. University of Tampere
5. St. Petersburg State University of Telecommunications	5. University of Vaasa
	6. University of Oulu

Experienced professionals from different companies

Source: Number of IT-specializations according to gks.ru; <http://www.tut.fi/en/current/the-academy-of-finland-awards-funding-for-research-on-erp-systems-p030476c2>

This list is based on universities of Saint-Petersburg only (from Russian side), but new tendencies of market dictate new directions for outsource collaborations. Big amount of IT

companies in St. Petersburg creates huge competition at the market of human resources. Level of average cost of IT specialists tends to be almost same as in European countries. As a result large companies which have powerful points of productions in Saint-Petersburg (e.g. T-Systems CIS) have started to open new offices in other regions of Russia to decrease costs of production and recruit more specialists for competitive value. But many regional technical universities in Russia still have Soviet approach for education process, which does not cover modern business attitude to software development process and fresh specialist are not applicable to work in European companies. So it is necessary to invest more money to adaptation process. That way is not suitable for the times of economical uncertainty that is why many companies try to create new methods of preparation of new stuff for real work in commercial projects. One of such methods is to create special programs of education in university and collaboration with regional institutes. Also another possible direction is programs of free internships which allow students to meet new realities of software development and European business culture. It allows increasing of satisfaction level of customers in future. Many companies have started to open their own departments and laboratories in regional universities, thus map of distribution of IT business in Russia will be expanded quite soon.

Also new facilities of ICT widen opportunities for collaboration and now possible region for interaction with Finland is not only North-West part of Russian but the whole country.

Current situation of collaboration of Finnish and Russian IT companies

One of the most important parts of research process is to understand current practical situation through investigation of real world cases. For those purposes employees of IT companies, involved in collaboration between Finland and Russia, have been interviewed.

From Russian side few employees of company in Saint-Petersburg, which has long-term relationships in outsource business with Finnish company, have been interviewed. They have immediate connection with software development process. The following positions were involved: two software engineers and one team lead / project manager. They participate in development of ERP system with Finnish colleagues for a long time. During interview all of them mentioned high level of satisfaction in working process with partners in Finland. They can always rely on their colleagues, which always show high level of expertise and flexibility

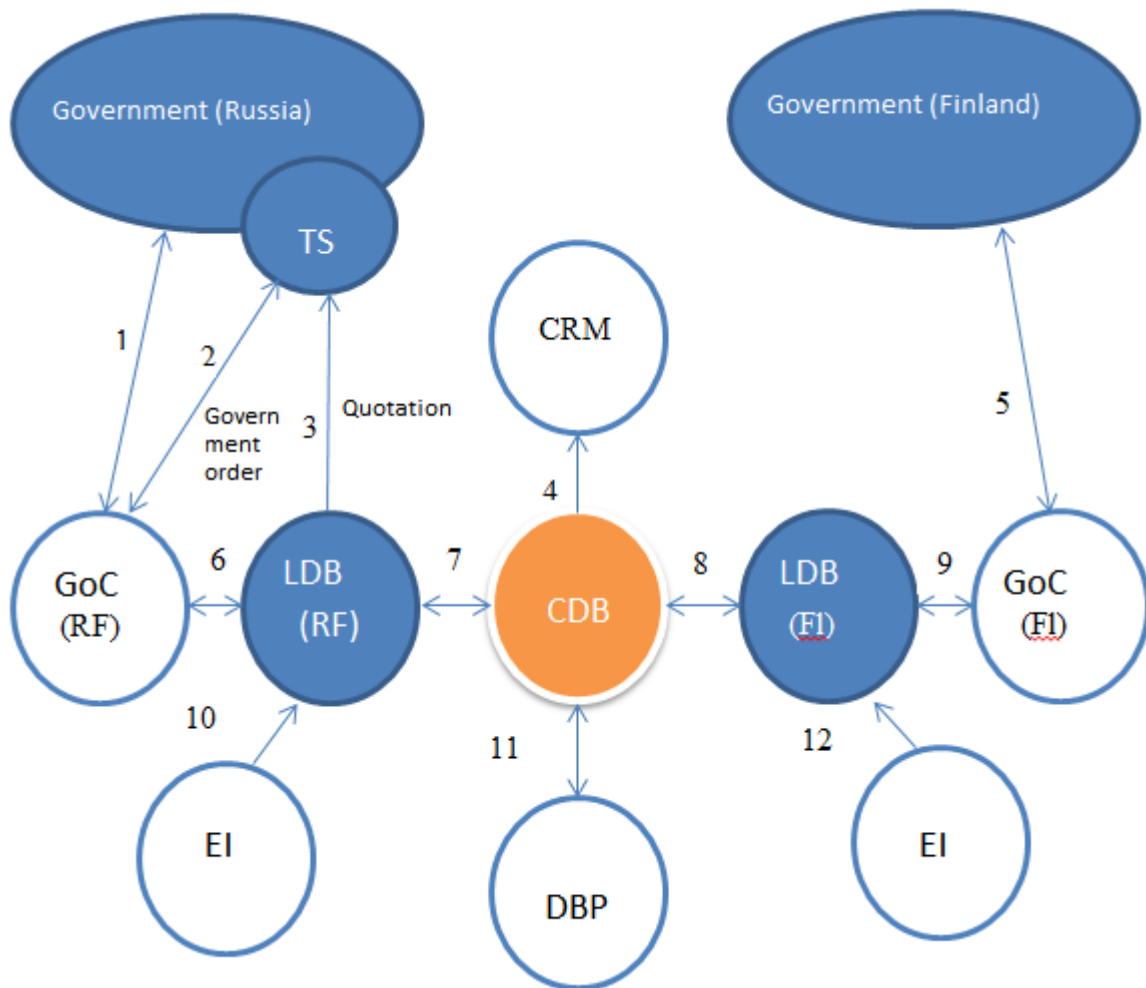
in management decisions. Short distance between St. Petersburg and Helsinki allows to have multiple business trips during all lifecycle of project. That fact guarantees transparency in development process and help to meet all requirements. Previously their Finnish partners used to collaborate with Indian company, but as a result they got low quality products and problems in communication. For those reasons they decided to change partners. Now satisfaction level is always on the high level.

Another example of Finnish-Russian trans-border relationships was small Finnish company in Lappeenranta which has main focus on development of mobile solutions for business. It has few start-up projects and interacts with Russian partners. CEO and project manager were interviewed.

They told that currently their company is oriented on Russian market mainly. It has rich facilities comparing with Finnish local market. And without support of Russian specialists it is not easy to meet all needs of Russian consumers and to achieve success. That is why they think that main source of success of many Finnish in future is collaboration with Russian companies. Besides, they have investor in Moscow which supports their innovative business initiatives.

As a result of those discussions, it might be said that there many existing successful relationships between Finnish and Russian IT industries and all participants of such interactions count on long-term partnerships.

Creation of the cluster map, cluster diamond model



Legend:

- GoC – group of companies;
- TS – tender system;
- LDB – local database;
- CDB – central database;
- EI – educational institutes;
- DBP – database of personnel;
- CRM – customer relationship management;

Analysis of cluster map

Relations:

Number	Description
1	Relationship between government and group of companies of Russia. Has imperative-informative character. Ministry of Information Technologies and

	Communications of the Russian Federation has a key role.
2	Connection with the tender system. Joint product allows overcoming the administrative barriers and participating in state procurement along with national developments. Can be used for personal development of a single company.
3	Request for bids on the electronic trading platform of the state order. Used to evaluate the attractiveness of particular projects to participate in the electronic auction. Can be provided as a unified access to a group of companies.
4	Interface for interaction with customers. The name is similar to the information system as CRM. It implements the fullest cooperation with the customer at all stages of development and product support. Can be used to communicate with both internal customers and external. As well as the ERP-system is expandable to achieve new goals and objectives.
5	Communication of government and group of companies in Finland. Has imperative-informative, but, unlike Russia, has a close relationship with the business, due to historical background.
6	Relation of group of companies in Russia with a local (for Russia) database. Necessary for successful coordination of the cluster on the Russian side. Serves as a hub of information, work environment, and helps to integrate new involved companies.
7	Interactions with other parts of the cluster by attracting the central database. Can be both tangible and virtual elements, depending on the consent of the universalization of the system used for quotation requests (specific to one side). At the stage of bilateral

	cooperation as envisioned as a virtual concentration of information can be done on the local database.
8	Similarly to paragraph 7, but for Finland.
9	Similarly to paragraph 6, but for Finland.
10	Relation between communities of educational institutions with the database in the country. Has a key role in the formation of personnel reserve of the Russian side.
11	The database is designed for staff to enable staff turnover within the cluster. Subsystem is virtual and it is located in the database. Used to store the results of the cooperation with the educational institutions, as well as working with external borrowings staff.
12	Similarly to paragraph 10, but for Finland.

Thus, the cluster can be formed on the basis of information and communication systems in Finland and Russia. The principle of horizontal cooperation on this method would be the most efficient use of each of the participating countries. Both countries have the capacity and resources to create such union, have sufficient experience in the field of software development and ERP-systems particularly that will successfully obtain contracts in both the permanent and new customers. The cluster structure will help facilitate the development costs of each individual system and reduce the cost of R & D in general, through a combination of funding programs at the national level cross-border cooperation programs of the European neighbourhood and partnership.

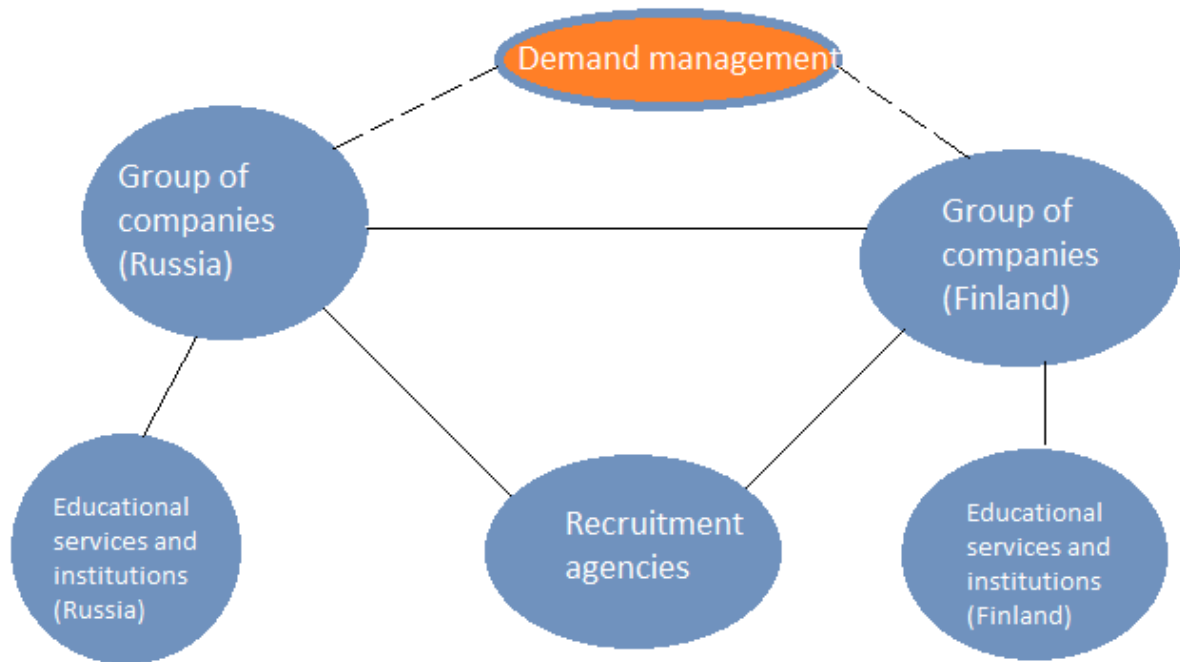
At the national level, may receive funding:

For **Russia**, the Ministry of Communications and Mass Communications of the Russian Federation, the regional commissions on small and medium-sized businesses.

For **Finland**: Ministry of Employment and Economy, Ministry of Transport and Communications, Ministry of Education, including the Academy of Finland, which is funding research in this area.

Own funds and subsidies of large companies involved in cluster may act as sources of co-financing at the early stages. In the future, the cluster will go to the creation of self-supporting software. The key factor is a payback period, because of the availability of all the necessary resources to create a cluster, markets, and experience in developing systems and high mobility of staff within both the industry and industry in general. Thus funds may be obtained for creation of the proposed cluster model for existing firms.

In case of cooperation of companies without government support, cluster map may be rather simplified:



Recruitment companies, both Finnish and Russian, interact with groups of companies and form databases of IT experts, control and stimulate flow of resources and exchange of expertises.

Finnish and Russian companies have straight relations with assistance of demand management if it is necessary. Companies play active role in forming of propitious and incentive conditions for young specialists in industry through cooperation with educational institutions.

In aggregation with overviewed companies, support institutes and ways of integration between both of countries, promoted cluster map can be used within a real cluster creation.

Summary

Nowadays Russia and Finland are important parts of international IT market.

Finland has formed favourable environment for ICT business which is valued in global scale. But globalization and some internal problems (such as reduction of population and high production costs) create new challenges and needs. It is necessary to extend market for IT solutions and to establish long-term connections with foreign partners and customers. Also educational exchange services can create basis for successful collaboration between Finnish IT experts and potential outsource partners.

Russia is on the way of diversification of economics and development of innovative methods of production. It has many problems in R&D environment, lack of support for IT industry, not reliable legal environment. But entry into WTO and modern realities bring new adjustments to politics and business environment of the country. New improvements allow creating productive international collaborations. And huge market and working facilities attract attention of many leading companies in IT industry.

Creation of cluster between Russia and Finland in IT industry can satisfy needs of both countries and promote existing expertises in development of ERP systems, extension of ecosystems for mobile devices and supply of cloud computing services. And that were only few examples of possible directions for interactions.

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POSSIBILITIES OF FINNISH-RUSSIAN HEALTH AND WELL-BEING TRANS-BORDER CLUSTER

Cluster study

1. Introduction

Trans-border cooperation increases the competitiveness of the goods, products and services that contribute to innovation and economic growth of the neighbouring countries in general. All of this creates a great opportunity for the development of Russian-Finnish cooperation, involving not only the exchange of resources, technology and know-how, but also creation a stable structures up to the formation of trans-boarder clusters. Favourable investment and business climate (including the mandatory development of competition and the creation of a common information space) will contribute to the deepening of regional and technological expertise and the implementation of unique business models that could lead to a mutual strengthening of competitiveness and an important step to ensuring a sustainable development of our economies. Finland has historically been a close neighbour and partner of the Soviet Union, and then Russia and now great potential for cooperation is laid in many areas.

The objective of this study was to determine possibilities of Finnish-Russian trans-border cluster on health and well-being sector. In Finland the line of business can be divided in four main sectors: health care services (public and private), well-being services, education and research (medical science and business economics) and production of health related products (medicines, surgical instruments, devices, furniture etc.).

The task was to analyze Finnish business environment in order to reveal the opportunities of Finnish-Russian health and well-being trans-border clusters for growth and development.

Methods and sources

The whole project started with an interview of Mr. Matti Kivipelto who works as a business service expert in Savonlinna Region Business Services. One of his lines of expertise is health and well-being industry. By interviewing him we got a good starting point for the later analysis.

The basic methods used were M. Porter's Diamond Model and PESTLE-analysis.

A very important source for us was the work of «Advantages of Finland», especially the part devoted to health and well-being cluster, of course, given in it statistics is quite outdated, but the methodology was very useful. We also used the web site materials in English, Finnish and Russian. Such as statistics Trading Economics fund, materials of Invest in Finland agency, publications in various medical portals (e.g. medical portal Treatment abroad), the presentations of medical conferences (e.g. XXI century, Medical and Pharmaceutical project) and news from Finland Care project.

For evaluation of Finnish health and well-being industry we found several useful sources, researches and publications from ministries and other national or regional authorities' websites.

Limitations for the research

Among the limitations of the research the following things could be mentioned:

- The abundance of information on a given topic with insufficient time;
- Lack of data on specific companies interested in clustering in internationalization;

Paper structure

The paper is structured according to the issues mentioned above. The first chapter is the analysis of national competitiveness of Finland regarding to health and well-being sector in terms of country diamond model by M. Porter. The second one is assessment of national institutional and business environment in Finland for the health and well-being trans-border cluster (PESTLE analysis). The third part of the paper contains factor analysis (opportunities and constraints for the health and well-being trans-border cluster to grow).

The fourth one is about cluster analysis and the creation of the cluster map. The fifth one is cluster analysis (demand and supply included). The sixth chapter includes cluster diamond model. And finally there is a chapter containing some students' recommendations for the future cluster development.

2. National competitiveness and competitiveness of the border region

National competitiveness - Finland

Finland is one of the most competitive EU country (and third overall). Finland's great strengths include innovation, its health and education system and well-functioning institutions, according to the Global Competitiveness Report 2012 published by the World Economic Forum (WEF). Thanks to small improvements in a number of areas, Finland has moved up one place from last year's ranking. WEF defines competitiveness as the set of institutions, policies, and factors that determine the level of productivity of a country.

According to the report, Finland boasts well-functioning and highly transparent public institutions, topping several indicators included in this category including property rights, intellectual property protection, efficiency of the legal framework, and the reliability of police services. Finland's private institutions, ranked third overall, are also seen to be among the best run and most ethical in the world.

Finland occupies the top position both in the health and primary education pillar as well as the higher education and training pillar, the result of a strong focus on education over recent decades. According to WEF, this has provided the workforce with the skills needed to adapt rapidly to a changing environment and has laid the groundwork for high levels of technological adoption and innovation.

The report places Finland second in the world for innovation. In addition to having the best availability of scientists and engineers, Finland is also among the top four countries for its capacity for innovation, company spending on R&D, university-industry collaboration in R&D, and the number of PCT patent applications.

2.1. Factor conditions

The structure of the economy

In Finland different spheres of economy are developed: agriculture 5 %, building 7 %, transport 9 %, trade 12 %, industry 27 %, services 40% (Institution of economy of Ivan Kushner).

Finnish economy has been growing during last 10 years faster than in other EU countries. Finland has one of the highest Gross Domestic Product per capita in Europe. Advantages of Finland are political stability, openness of economy, high development of infrastructure, reliability of telecommunications and high level of interaction between companies, research centres and universities. In addition speed in development of new technologies, high educational level and positive business climate are important factors in competitiveness of Finland.

The Gross Domestic Product (GDP) in Finland contracted 1.10 % in the second quarter of 2012 over the previous quarter. Historically, from 1975 until 2012, Finland GDP Growth Rate averaged 0.6% reaching an all time high of 5.0% in September of 1980 and a record low of -6.3% in March of 2009. The Gross Domestic Product (GDP) growth rate provides an aggregated measure of changes in value of the goods and services produced by an economy. Finland has a highly industrialized, largely free-market economy. Its key economic sector is manufacturing - principally the wood, metals, engineering, telecommunications, and electronics industries. Trade is important, with exports equalling almost one-third of the GDP. (Trading Economics fund.)

Finland Inflation Rate

The inflation rate in Finland was recorded at 2.70% in September of 2012. Historically, from 2001 until 2012 Finland's inflation rate averaged 1.8% reaching an all time high of 4.7 % in August of 2008 and a record low of -1.5% in October of 2009. Inflation rate refers to a general rise in prices measured against a standard level of purchasing power. (Trading Economics fund.)

Unemployment

The unemployment rate in Finland is below average than unemployment in the other EU countries (10,6 %), but nevertheless remains rather high among EU member states. Post-crisis revival of economy and favourable development of a situation in the first half of 2011 led to decrease in unemployment rate following the results of 2011 to 7,8 % (8,4 % at the end of 2010) and to growth of number of busy able-bodied population to 68,5 % (67,8 % at the end of 2010). In 2012, according to

forecasts, the unemployment rate can increase to 8,1 %, and the employment rate will remain at level in 68,5 %. (Trading Economics fund.)

Characteristic feature of unemployment in Finland is quite high unemployment rate with shortage of workers in the spheres demanding high vocational training. Finland have 2.7 practicing physicians and 9.6 nurses per 1 000 population which is the lowest among the Nordic countries.

In Finland for employment by some professions it is not enough to have the document on recognition of foreign higher education; the decision of qualifying instance of Valvira is required still in addition. Medics, in particular, treat such professions.

Standard of living

Finland has rather high standard of living. With growth of welfare nation health improves also. Nation health raises, it is possible to judge it at least therefore as people answer a question of a state of health. 2/3 Finns consider their health good or satisfactory. Level of child mortality in Finland is one of the lowest around the world. It has been reached including at the expense of high level of vaccination – here it reaches 95 %. Vaccination is carried out free of charge. Average life expectancy is 74-76 years for men and 81-83 years for women. (E-Finland.) With growth of the income Finns are ready to spend more for the health and wellbeing.

Research/Scientific centres

Finland has a network of five university teaching hospitals which makes up the tertiary level. These contain the most advanced medical equipment and facilities in the country and are funded by the municipalities, but national government meets the cost of medical training. The University hospitals are located in the major cities of Helsinki, Turku, Tampere, Kuopio, and Oulu. In fact, these are medical clusters in which are located: medical universities, the research centres and laboratories, highly specialized hospitals and hospitals where, actually, treat patients, and accompanying infrastructure, as for example, hotel for patients. That is all medical institutions which are engaged as development and innovations and their introduction, and treatment

of people and training of future doctors, are located in one place. (S-Petersburg portal about Finland.)

The most of the doctors of university clinics are actively involved in the research work which is carried out on the highest international standards. At the expense of it quality of rendering of medical care in Finland is one of the best not only in Europe, but also in the world. A reasonable expenditure of means, concentration of all efforts for the sake of recovery of the patient, worthy salaries of the personnel are the components which have allowed to create the health system involving patients from all over the world.

Finland Exports

Finland wants to keep socialism principles in health system and thus reconstruct it — prepare for export of medical services. According to the instruction of the European community, since 2013 citizens of EU Member States can receive medical care in any country entering into EU. It means, in Europe medical tourism actively will start to develop. The Finnish state health system is recognized as one of the most effective and safe. However now it is calculated only on citizens of Finland. The system obviously should be reconstructed. However, it became clear already a few years ago when behind medical care to Finland there went Russians, generally Petersburgers.

Increasing numbers of Russian visitors are coming to Finland for cancer treatment, prenatal services, surgery and dental care. The demand for Finnish health services, especially from Russian visitors, has been growing rapidly in recent years and the market is expected to triple by the end of this decade. According to Marco Roth, Development Manager in charge of the Health and Well-being Cluster at FinnMedi Oy, in 2011 about 12 000 visitors spent money on medical services or medicines. Finnish hospitals and health care service providers offering high-quality medical care established the web portal www.healthcarefinland.ru this year as way of attracting more customers from Russia. In 2011, Russian visitors to Finland spent about EUR 670 million on products and EUR 220 million on services, of which EUR 15 million went on health care. Hospital specialists and directors in the South Karelia region of

eastern Finland have been receiving an increasing number of email enquiries. (Treatment abroad medical portal.)

2.2. Demand conditions

As Finland is one of the fastest ageing countries in the world, needs for care services grow. Requirements at level of health care raise and rapid growth of competitiveness of the country in the field.

The Finnish welfare system consists of two main elements, the pension system and publicly-financed services, where many principal services related to ageing (like healthcare and old age care) are provided by the local governments. The projected increase in age-related expenditure is higher in Finland than on average in the EU and is mainly driven by pension and long-term-care expenditures, while the ratio of health care expenditure to GDP.

Aging of the population forces the companies to enter the increasing quantity of innovations.

2.3. Related industries

Chemical industry (Finnish Pharmacy Industry)

The chemical industry takes the third place in economy of Finland after the metallurgical and wood industries. It forms 13 % of GDP of the country. Pharmaceutical production occupies 6 % from volume of all chemical industry. In 2010 pharmaceutical sales was around 1.93 billion euro (75% pharmacies, 25% hospitals). Experts mark growing interest in cancer, immunotherapy, systemic hormonal preparations and decreasing interest in cardiovascular and anti-infective medicines. The top-ten pharmacy companies in Finland include Orion Pharma, Pfizer, Novartis, AstraZeneca, GlaxoSmithKline, MSD, Sanofi-Aventis, Roche, Leiras, Bayer. Finnish pharmacy industry employs around 5300 highly-professional employees. In Finnish pharmacy industry bid amount of investment is observed. R&D investment was 230 million euro. (XXI century, Medical and Pharmaceutical project.)

Biotech Industry

Biotech Industry includes around 200 companies, mainly SMEs. 120-150 companies work in the core biotechnology business and there are 40-50 supporting companies, in subcontracting (consulting). Total amount of employers in biotech industry is about 8500.

We can divide biotech industry by business lines in diagnostics 35%, drug discovery 25%, food and feed 20%, biomaterials 10%, enzymes 10%, bioinformatics 5%, environment <5% and agro <5%.

Finnish biotech industry has many important advantages:

- educational system ranked as the best in two consequent PISA studies
- strong biotech research from the early 1990's
- biotech industry consolidation during 1950-1990
- a boost in new biotech business in late 1990's till nowadays
- excellent clinical research track records.

(XXI century, Medical and Pharmaceutical project.)

Finnish In Vitro Diagnostic Industry

Finnish In Vitro Diagnostic Industry's value of production is 350 million euro with export rate of 90%. It consist of about 30 producing companies, the big ones are PerkinElmer Wallac, Thermo Fisher, Orion Diagnostica. There are many rising and developing companies such as Medix, Abacus Diagnostica, ArcDia, MobiDiag, Ani Biotech and others.

Finnish diagnostic industry is very successful and fast growing one. There are several proven technology platforms, specific education and research at the university level, availability of well-trained personal, possibilities for project financing and R&D (XXI century, Medical and Pharmaceutical project.)

Information and communication technology (ICT) industry

The Finnish ICT industry is professional, profitable and trustworthy. Finland is a high-tech nation that offers great market potential with R&D opportunities in the ICT

sector. Finnish ICT ranked number one in Europe and number two in the world according to IT industry competitiveness Index 2011 and also ranked number one innovation hotspot in Europe and number two in global R&D. (Invest in Finland fund.)

The competitiveness of the Finnish ICT industry depends on continuous monitoring of markets and consumer behaviour and ability to change accordingly. TIEKE Finnish Information Society Development Centre has a vital role in building Public Private Partnership networks and initiating concrete projects to promote information society. Finland has been resolutely developed into an information society over the course of several years. As the information society has advanced, changes have been experienced by production, working life, training, distribution channels, consumer habits, and everyday life. The new applications of information technology have had a major impact both socially and economically. Investments in research and product development are high in international comparison. Finland is one of the top countries in regard the use of electronic services in public administration and health and well-being sector. For example, new patient data system for the Helsinki and Uusimaa Health District which can integrate different data from different sources and create more time for patient care. (Invest in Finland agency.)

For companies, for industry, and service producers, the advanced use of ICT and the well-functioning of the information society are essential tools for the future.

Tourism industry

The Finnish Travel and Tourism sector offers everything required for doing successful business: a dynamic business climate, a clean and unique environment, and a society that is both safe and internationalized. The number of foreign visitors in Finland has increased significantly during recent years. According to forecasts by the World Travel Tourism Council (WTTC), the total demand for travel in Finland will grow by 33.7 percent between 2006 and 2016. Currently comprising only 2.4% of GDP, Finland's travel sector has great potential for growth, (the EU average is 6%). (Invest in Finland agency.)

Finland offers unique and unspoilt nature with four distinct seasons, safe and friendly atmosphere, easy transport connections to and from east, west and south and excellent business opportunities in varied business areas.

The role of medical tourism is growing with growing the whole tourism sector in Finland. Russians are increasingly going to be treated in Finland.

According to Mark Roth from FinnMedi Oy, promoting medical tourism country is best to start with the Russian market: Russia has great potential, plus the geographical proximity plays a role - transport links to major cities and offers excellent Finnish.

In 2012, Finland has intensified efforts to attract patients from Russia. Specialized portal, through which Russian citizens are now able to find the necessary medical treatment in Finland, without using intermediaries, is opened. Virtually in all major medical institutions throughout the country are now working Russian-speaking professionals. Many health care centres organize accommodation for the customers. Russian tourists choose Finnish medicine for its excellent quality and relatively low price order. Most often, the Russians are turning to the Finnish doctors to diagnose, treat, cure infertility and for dental services. In addition, the level of the Finnish valued cardiology, orthopaedics and oncology. Here are the different rehabilitation centres that provide services to the people of Russia regenerative medicine, in their country, as it is known, the system of rehabilitation is not developed.

Experts note the strong growth in demand for health services in the region of South Karelia. Last year increased the number of e-mails with references to the doctors of various specialties and applications for treatment in hospitals in Finland. (Treatment abroad medical portal.)

Logistics (for medicines, surgical instruments, devices, furniture)

From its position as the transport corridor between east and west, Finland's logistics services are the most efficient and secure in the Baltic Sea region. Finland also provides the most congestion-free transport channel from Europe to Russia and Asia.

Finland offers a stable and straightforward business environment, good services, a high-quality workforce and modern logistics centres which are under development in many areas. We see opportunities not only in logistics for real estate and property development but also in value-adding logistics services. Transit traffic to and from

Russia is important. Finland is an important route for high-value goods to Russia, and is in a good location for shared service and logistics centres serving the Russian market and also other Nordic countries.

Food production

Competitiveness is high in Finnish food industry and production development has led to the creation of internationally successful products. Successful products and trustworthiness are the result of the strong integrity of food and drinks industry professionals. Quality is further guaranteed by innovative product development and advanced production technology.

Close and transparent cooperation across the food processing chain ensures a supreme standard of food safety from raw ingredients to the finished products. Corporate social responsibility policies and commitment to environmental friendliness are the cornerstones of the Finnish food and drink industry that ensure sustainability far into the future.

Compared to other industries the food industry ranks fourth in terms of the value of its output. The largest production sectors are meat processing, dairy, bakery, and malt and soft drink industries. There are around 3 000 industrial food manufacturers in Finland. Many companies have established a market position in Russia, Sweden, Poland and the Baltic States.

Finland's main export products include pure raw materials, health-enhancing specialities and high-tech products. The most popular export items are cheese, butter and other dairy products, chocolate and confectionary, health-enhancing products, special dietary products and alcohol. The main export destinations are Russia, Sweden, Estonia, Germany, the USA, Denmark and Norway.

2.4. Context for firm strategy and rivalry

Local competition

Russian-border region of Finland undoubtedly has a set of advantages to offer in the competition for Russian client. With introduction of high-speed railway communication the arrival problem practically disappeared: now the way from the

centre of Saint-Petersburg to the Lappeenranta (Vainikkala) takes less than 2 hours. Health care service patients have a possibility to arrive to Finland on consultation to professionals of world level, to be surveyed and return on the same day home.

On well-being sector there are several spas and recreation facilities on the border region, but the masses coming from North-West Russia are so big, that the companies are not so much competing but supporting each other with different kind of services.

The language barrier is notable

The Finnish scientists see the real problem in weak knowledge of Russian language: only every 50th inhabitant of the five-million country now speaks Russian. But every third inhabitant of South-East Finland supports an option of school students to study Russian instead of Swedish. Results of poll which has been carried out by three regional Finnish newspapers Etelä-Saimaa, Kouvola Sanomat and Kymen Sanomat. According to poll, over a half of inhabitants of South-East Finland would like, that studying of the Swedish language at schools was facultative. Thus every third respondent considers that school students should acquire the right to choose between obligatory Swedish and obligatory Russian. 14 % of respondents would like to leave everything as is. (Fund unity of Russia.)

International competition

There are more than 14 million tourists per year in Russia. As data of the Russian Federal Service of State Statistics testify, the majority of our fellow citizens (about 60 %) choose beach rest, and slightly more than 23 % go to the countries "with treatment". For the purpose of medical and improving tourism more than 1 % of our tourists leave slightly, but experts note that annually this number grows for 30-40 %. Now for receiving medical services of Russians involve 4 countries: Germany, Israel, Turkey and France.

Conclusions

In the initial version of drawing up of diamond model we can estimate competitiveness of Finland and especially boarder region at high level. Finland is the

country with good factor conditions – high level of gross domestic product and a standard of living as a whole, a low rate of inflation and the unemployment, the developed scientific centres and high level of investments (state and private). Fast aging of the population will result, on the one hand, in shortage of qualified personnel in the future if the appropriate measures aren't taken, and with another – growth of requirement for high-quality services increases competitiveness of branch and increases growth of innovations. High development of pharmaceutical, biotech and diagnostic industries increase the competitiveness of the country. The fact that Finland is a leader in the field of ICT also benefits - it is possible to implement and use in medicine latest developments in this field. Beautiful roads and the high educational level of the population complement a diamond. The competitiveness in the region can be highly appreciated.

3. Assessment of national institutional and business environment in Finland for the health and well-being trans-border cluster – PESTLE analysis

3.1. Political factors

The Finnish health care system is going through a service structure reform as a part of the local government reform. Financing and organizing responsibility of social welfare and health care is on strong municipalities. Today's hospital districts are going to be combined administratively into specific catchment areas, which will be responsible of certain centralized and special group's services as well as service coordination. The aim is to organize services in a way that equitable high quality services will be obtained by whole population regardless of the place of residence. At the same time adequate community services and availability of competent workforce must be secured. (Ministry of Social Affairs and Health.) This reform is going to affect on the production of social and health care services on the public and private sector. Difficulties in financing the services are increasing as the population is ageing and there is going to be a competition of workforce in the future. For example these aspects can open new possibilities for foreign investments in Finland and a need of recruiting personnel from abroad.

Ministry of Employment and Economy has set a strategic Welfare Service Development Programme – HYVÄ for years 2011-2015 to support and develop the Finnish wellbeing industry, strengthen the preconditions for providing social and health care services, to promote entrepreneurship in the field and to develop the welfare sector as a growing and internationalising branch of industry. HYVÄ programme concentrates mainly to the services of social and health sector – not so much on the wellbeing business.

On the regional level municipalities' service-, business-, development-, public procurement- and economic strategies (long term aims and principles) have a central role as developers of the whole service network and are determining the direction where health and well-being sector is developing on the area.

3.2. Economic factors

Uncertain global conditions in economy have led to economic adjustment in many EU countries as well as in Finland, where the government decided remarkable cuttings of expenditure and tax increases. By time that influences also to the health care sector. Economy affects to that how much resource can be used for improving health and well-being services and also for expert work done on that sector. If the economic crisis of the 2010s gets deeper and the figures of unemployment grow the impacts will be seen long after year 2020 in the health and well-being of the population.

In Finland the costs of the public healthcare sector are going to grow in future due the ageing population. Welfare sector services are a growth industry and more focus has to be set on preventive actions and postponement of service needs. On the other hand people have more money to spend on themselves and are more aware their personal wellbeing. Demand for wellbeing services rises and that is going to influence the public and private sector businesses. In this situation it is important to secure financing, control costs and improve productiveness without reducing from service quality and effectiveness.

So far the domestic demand has been feeding enough patients for the public and private sector of healthcare and nursing services which has led to a situation where private companies and special care university hospitals have not had strong

willingness nor need for internationalization quite yet. In the private sector one obstacle is the small size of the service providing companies. And on the public sector obstacles are the lack of capacity (long queues to treatments), inflexibility of the human resources and problems related to pricing of health care services. If these problems can be sorted, there are huge possibilities in the future!

3.3. Social factors

Finland is Europe's fastest ageing country and the growing need for nursing and care services dates on the same time with employee's retirement. By the year 2020 over 100 000 people are retiring from the health care industry. It is extremely important to support the working capacity of the population and develop working life in a way that people are willing to continue their careers after the normal retirement age. Dependency ratio is weakening in year 2020 there are 50 inhabitants over 65 years of age per each 100 of 15-64 year olds. (Laiho, Korhonen, Hartman, Skogberg, 2011.) Alongside public and private sector health care businesses third sector services providers and volunteer work of the relatives has become more important in taking care of the elderly and e.g. disabled people.

The health care system as a whole works very well and services in general are readily available. However there are marked differences between socio-economic groups and between different parts of the country in the availability, use and adequacy of care services. The improved efficiency of health services has not fully satisfied the growing demand for services. (Koskinen, Aromaa, Huttunen, Teperi, 2006.) Public awareness of individual's own choices affecting your health raises expectations towards the service providers.

When thinking about the possible trans-border cluster formation one important thing about health care customers coming from Russia is the language skills of the service provider. Especially in treatments given in hospitals the need to be served with your own language is very high. But when the customers from abroad use the services, the company's/organization's actions naturally turn more customer orientated way.

3.4. Technological factors

By the Finnish Health Technology Association, FiHTA, export of Finnish health technology declined 2,6 % to EUR 1.34 billion in 2011. In spite of decline industry's importance for Finland's economy and trade rose in year 2011. Expert Sean Donovan (who analyzed the situation for FiHTA) says that the decline is partially explained by the changes of exchange rates.

By the statistics of customs, share of health technology product export approaches 30 percent of all high technology export in Finland, being the second largest exporter of high-tech industry after telecommunications business.

To make clear what is considered as health technology - in FiHTA's health technology report the products has been divided by the trade statistics in following segments: medical equipment, medical furniture (e.g. hospital, dental, rehabilitation), medical implants and diagnostics (for hospital laboratories and life sciences).

United States of America was the leading destination for Finnish health technology equipment in 2011 by its 37 % share of all the exported product categories. See Appendix 1.

Rapidly Industrializing Countries – RIC (in this report BRIC+ -countries: Brazil, Russia, India and China (inc. Hong Kong) – together with other important, representative markets of Mexico, Turkey, South Africa and Saudi-Arabia) represent over 14 % of total exports, from which China and Russia were the leading destinations. See Figure 2.

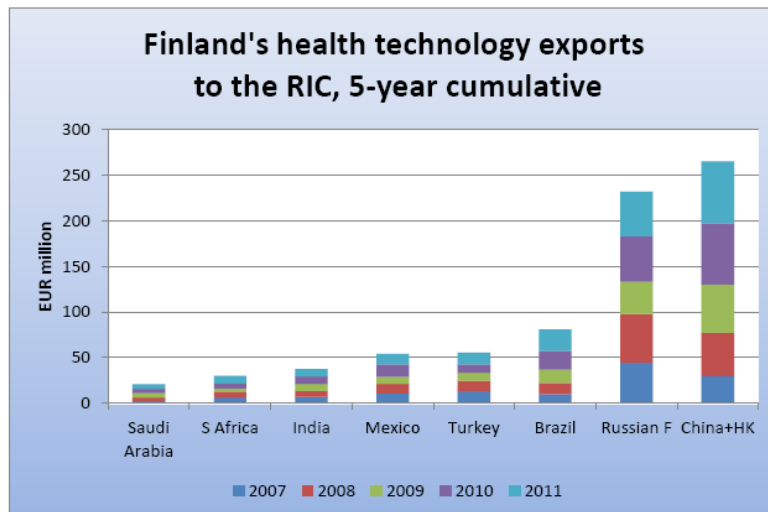


Figure 2. Finland's health technology exports to the RIC, 5-year cumulative, Donovan S.

Donovan states in his report that the better growth prospects in the future are in BRIC+ -countries rather than in traditional export markets in North America and Europe. Matters that are threatening growth are outsourcing, availability of appropriately educated and skilled personnel and the industry's sensitiveness for external shocks in the world economy.

Global technological change is affecting in all areas of life and not at least on social behaviour. Communicating becomes easier and faster. Virtual ways of working become more common and the meaning of social media is emphasized. Marketing of health care services is very challenging in itself (e.g. how to authentically prove marketing vice the quality and level of a service) and all the companies and organizations must fight harder than before to get their message heard.

Virtual and interactive ways of doing work become more common, communication is moving rapidly to internet based software. That causes a pressure for new, expensive software investments on health care sector and can also cause some disadvantages in form of IT security threats.

Service export is not yet very remarkable, but combining care/nursing services and health technology can generate new possibilities for future. (Laiho et al., 2011.)

There are great expectations on eHealth (electrical health care) services concerning improvements on productivity, quality, cost efficiency and availability. eHealth services can be divided in four main sectors which are: 1) clinical information system (professionals), 2) personal health systems and services (citizens), 3) integrated regional and national health care information systems and networks (ICT infrastructure) and 4) health care's electrical management systems. To open the market it is essential to notice the difference between legally governed services and market-driven services and in that how the interface of these two will be operated. Despite the expectations towards the eHealth sector, practical impacts have so far been minimal. (Hjelt, Pursula, Vehviläinen, Ahvenharju, Hietala, Kämäräinen, 2010.)

3.5. Legal factors

Municipalities have legal obligation to organize social and health care services for residents (regulated by social care law, health care law, health care act, specialized health care law), which leads to that development of service branch is influenced by how municipalities open their service delivery for competition.

Companies acting globally on the health care sector have to have knowledge of service markets, business, rules and regulations concerning business actions and controls of the business sector of the particular country.

3.6. Environmental factors

Climate change's affects to health are getting stronger and uncommon weather phenomenon seems to become general. Traffic amounts together with total emissions are still rising, urbanization continuing and community structure condensing which leads to increasing in health problems caused by noise and air pollution. For Finland's benefit the country has still considerably less air pollution than e.g. the St. Petersburg region from where majority of the Russian customers come from. Also locally produced food could be another advantage added to the list when marketing the border region's safety and cleanliness.

In Finland the National Institute of Health and Welfare helps communities and other parties to maintain the high level of Finnish environmental health by research activities, taking actively part to public discussion when evaluating alternative

decisions concerning health and well-being and developing methods for evaluating environmental changes.

In many companies sustainable development is nowadays part of the firm strategy and is being taken into consideration (energy efficiency, sustainable materials) in decision making and product/service development as a competitive advantage. On the other hand sustainable development causes financial losses for companies producing high-tech medical care devices when products are being developed sustainable and not for only few years use.

4. Factor analysis: opportunities and constraints for the health and well-being trans-border cluster to grow

4.1. Opportunities

The working group appointed by the Ministry of Employment and Economy has evaluated that there is a lot of potential in social and healthcare services for internationalization and export. Short term expectations are focusing on high level expertise on medical procedures and nursing services and for research and expertise based consultation services. An important and central requirement for especially providing health care services for Russians is to develop an action model, on which is being organized versatile service network, marketing of services and related support services (sorting out visas, travel arrangements, accommodation). (Hartman & Kahri, 2011, p. 32-33.)

Since Finland is lacking trained professionals on healthcare sector, there is and will be a growing demand for recruiting personnel from abroad. There are already many Russian doctors working in the central hospitals of the border region of Finland. As a future's possibility can be seen getting trained doctors and nurses from Russia to Finland. That demands cooperation between the educational institutions and ministries (e.g. language skills, conversion education, and qualification approval). Russian scientific and human resources are a huge advantage for the development of Finnish health care industry if the cooperation between the countries is based on a long-term strategic planning. With a cluster's joint strategic plan, the future changes of the industry can be prepared and dealt with flexibly.

Also the well-being sector needs more educational and training exchange to make the younger generation more familiar with the different kind of cultures across the border. Mikkeli University of Applied Sciences and Saimaa University of Applied Sciences have already invested in multicultural international business study programs that have a contribution in understanding the cultural differences between the countries. Knowledge reduces prejudice.

Tutkimus- ja Analysointikeskus TAK Oy has done a research for FinnMedi Oy about the health tourism markets in Finland. According to that research Russian people are interested in getting health care services from Finland (people interviewed at the clinic in St. Petersburg 72 % and Russians travelling to Finland 38 % were either interested in using or had already used health care services abroad). The most appealing country to by health care services is Germany, but Finland has reasonably strong position among those Russians who have travelled in Finland before. Compared with other competing countries, Finland suffers of weaker quality image, which is the most important selection criteria according the interviewees. The most interesting and wanted treatments were cancer treatments, heart- and vascular disease treatments, bone and supportive organ surgery, infertility treatments, prenatal services and dental care.

By Hartman & Kahri (2011, p. 24) Finnish opportunities of the health care industry service sector are based on expertise in prenatal care, occupational health, preventing illnesses (e.g. diabetes, breast cancer) and on well-developed sheltered housing system for elderly people, which all are naturally bound to cultural- and service system and need a great deal of productization and commercialization. Because many Russian people are moving to live permanently in Lappeenranta, Imatra and Savonlinna regions there might (after few decades) be a new demand sector for elderly care housing for Russians who have moved to Finland after millennium.

Foundation of the Finnish business service network is at high level regionally. Cooperation between authorities, education system and companies works well. Public and private business services are helping firms in networking with each other and finding best practices. As a future's development point and opportunity can be seen enhancing cooperation not only regionally, but between provinces. That is for

example between South-East Savo province and South-Karelia province. More coordinated collaboration could be done in terms of e.g. joint marketing.

Marketing of health care and well-being services needs an organisation to link services and organize distribution in centralised manner. Good example of centralised marketing in health care sector is the HealthCareFinland, which is a joint venture of Finnish hospitals delivering high-quality medical care (<http://www.healthcarefinland.ru/en/>). The possible trans-border cluster could benchmark HealthCareFinland and possibly join in to it.

The role of the regional business services and tourism authorities is remarkable for health and well-being sectors marketing. Those public and private organisations can create networks between companies and benefit them by joining forces in marketing strategies and campaigns in trade fairs, social media, direct selling operations etc.

Especially for Savonlinna region the opening of Parikkala international border crossing is a huge opportunity and strategic planning in marketing, service production and zoning, etc. should be done well in advance to be prepared when the border opens for travellers. The possible health and well-being cluster should join forces with the tourism industry, because the customers are more or less the same and the joint marketing releases resources to other company actions.

4.2. Constraints

At the moment public health care capacity and the adequacy of staff is a remarkable obstacle for service export. Long patient queues in public special health care hospitals e.g. to orthopaedic surgery have led to the situation that also private sector orthopaedic activity has enough demand on domestic markets in Finland. Also network of sheltered housing does not meet the needs of domestic customers in future due to ageing population.

By Hartman & Kahri (2011) basic abilities for concrete actions and exploiting opportunities on health care sector is on variable stage. There is lot to be done with the basic abilities in internationalization, the industry is missing an operator who would coordinate the service network, marketing and patient flows. And due to

different kind of laws and information systems there are also some obstacles concerning patient information and movement of samples.

Also the language barrier can be seen as a constraint for the trans-border cluster to grow. Young people need to be motivated to study Russian and Finnish. In many of the Eastern Finland primary and high schools it's already possible to choose Russian as your second language, but it still needs some levels attitude change for students to recognise the possibilities of studying Russian.

The problem of the joint trans-border development projects is that the actions are project-like. Investments in cooperation and development should be long-term and permanent.

Russian bureaucracy, corruption, instability of economic situation and the Finns weak expertise concerning Russia are slowing down the readiness of Finnish companies to cooperate with the Russian ones.

4.3. Swot analysis

Swot analysis describing the strengths, weaknesses, opportunities and threat is attached as Appendix 2.

5. Cluster analysis and the creation of the cluster map

Cluster analysis between two countries is very broad topic to discuss. However here is being introduced some of the existing and possible linkages between Finnish and Russian Enterprises. In 1970's and 1980's, Finland was one of the main trading partner with Soviet Union in western world comprises of 85% of the exports of Finnish origin. Now, there are almost 3000 small and medium sized companies operating in Russia. Finland is very small country with 5.2 million population, but there are a lot of business opportunities for them in Russia. Russian market is very attractive.

Supply

FinlandCare programme supported by the Ministry of Employment and the Economy of Finland promotes cooperation between the medical community,

hospitals and scientific institutions of Russia and Finland. Program participants are the leading hospitals in Finland. Finland Care is a non-profit project aimed at supporting affordable and convenient communication of health workers, patients and other stakeholders. The project is an information portal www.finlandcare.ru.

In Russia, practical realization of the project entrusted to the Centre of Commerce "Finpro" at the Consulate General of Finland in St. Petersburg. In "Finpro" in St. Petersburg free client consultation service for physicians, patients and partner companies is organized. FinlandCare program is developed in collaboration with the Government of Finland.

The undeniable Finnish advantage in terms of medical and health tourism is its geographical proximity to Russia. The journey from St. Petersburg to Vainikkala (Lappeenranta) by train Allegro takes only hour and a half, and the same time - flight from Moscow to the capital of Finland. Excellent roads and infrastructure will deliver maximum enjoyment and comfort of a trip by car. There is a huge problem - many hours of queues at the border, which become virtually insurmountable in case of one-day trip. Patients coming to Finland for treatment, their relatives and accompanying persons can benefit from medical hotels which are now becoming more and more popular.

Other supply chains should be developed for the services of well-being companies. For now those have operated mainly via regional joint marketing project funding, but the efforts and strategies should be made on long-term basis.

Demand

Increasing numbers of Russian visitors are coming to Finland for cancer treatment, prenatal services, surgery and dental care. The demand for Finnish health services, especially from Russian visitors, has been growing rapidly in recent years and the market is expected to triple by the end of this decade. Demand for health services is growing together with the increasing number of tourists. According to Marco Roth, Development Manager in charge of the Health and Well-being Cluster at FinnMedi Oy, in 2011 about 12 000 visitors spent money on medical services or medicines. Finnish hospitals and health care service providers offering high-quality medical care established the web portal www.healthcarefinland.ru this year as way of attracting

more customers from Russia. In 2011, Russian visitors to Finland spent about EUR 670 million on products and EUR 220 million on services, of which EUR 15 million went on health care. Hospital specialists and directors in the South Karelia region of eastern Finland have been receiving an increasing number of email enquiries. (Treatment abroad medical portal.)

According to project leader FinlandCare Olga Makeeva, health care system in Finland was focused on domestic service. But now it became clear that without further development, through more taxpayers, the health system will not be able to exist. Another reason for enhancing the attraction of foreign patients, expert called the entry into force of the EU "on patients' rights in cross-border health care," according to that after January 1, 2014 all EU citizens will have the right to be treated in any EU clinic. Therefore Finnish clinics, which have never worked with foreign patients, are facing a number of pressing challenges - physical, legal, psychological, and even for a foreign patient to accept, not so simple. Russia is the first market in which Finns collectively come to promote their services. First and foremost, Finland is interested in the Russian market of medical tourism. According to the expert, Finland is a leader in the areas of medical tourism, which the Russians are most in demand. These are cancer, heart surgery and prosthetics. Finland has a number of advantages in comparison with other countries. First of all its geographical location is convenient for the residents of North-West Russia. Finland is also less popular among medical tourists than the other direction (Germany, Israel), so in case of emergency treatment, it can be provided much more quickly than in other foreign clinic with long queues. (Treatment abroad, medical portal.)

Possible cluster companies and organisations

MedFlight Company provides services for transportation of patients in a state of intensive care between health care institutions in the air ambulance. MedFlight partners are Finnish insurance companies, hospitals and tourist operators.

EMA Company provides medical care to tourists, providing ill or injured abroad the necessary treatment, carries medical advice, monitoring of treatment a patient in a hospital, and the transportation of patients.

In the **Central Medicine District** and in Tampere region operates a number of companies interested in promoting their services to Russia. We can mention clinic Docrates (Helsinki), Soha (Tampere), Arte-Doctor (Lahti-Heinola), Clinic NEO (Turku), Clinic ORTON (Helsinki). And of course there are many in a border region.

Clinic Helena, Savonlinna Treatment of breast cancer. Plastic surgery "Helena" is one of the leading medical institutions in Finland in the treatment of breast cancer. The latest technology and extensive experience allow us to offer advanced methods of getting rid of the disease and recovery after mastectomy. Russian patient's care is conducted in Russian.

Private dental centres **Med Group**. The company Med Group offers a wide range of dental services. Currently, the structure of the company consists of five dental centres in Finland - three are in the Helsinki region, and two more in Kotka. Med Group is creating a network of multidisciplinary dental centres focused on the most complete and convenient services for patients. Among the many areas of medical practice, the direction of health and oral hygiene is one of the most dynamic and relevant. Med Group is committed to ensuring that the services of dental centres are safe and meet the highest quality standards. To do this, the company is constantly conducted a careful monitoring and evaluation of centres associated with dental procedures.

Nordic Clinic is Finnish operator organization of medical services. The company is an expert in the field of health services and offers to provide medical care to its international clients only the highest-quality hospitals. Nordic Clinic provides a full range of health care services in different areas; convenient and effective treatment in hospitals in Finland at competitive prices. The head office is located in the Nordic Clinic Helsinki. The extensive network of Nordic Clinic consists of private and public hospitals, including the cities of Helsinki, Turku, Tampere, Oulu, Savonlinna and Lappeenranta.

Clinic Felicitas-Klinikka, Lappeenranta It employs leading specialists in the treatment of infertility, gynaecology and monitoring during pregnancy

South Karelia Health Network An association of companies that specialize in high-quality services aimed at promoting health and well-being of their clients. Health

centre in the area of Lappeenranta, Imatra, near the Finnish-Russian border, and offer numerous possibilities for accommodation and rest in order to make the stay as comfortable and enjoyable.

Fysio-Eskola, Lappeenranta complex offers visitors a variety of health and rehabilitation activities and procedures - consulting instructor physiotherapist, a wide range of physical therapy sessions on a specially designed physical culture programs. Support of Russian specialists.

Lappeenrannan Kuntoutus, Lappeenranta The complex is located in the centre of Lappeenranta and provides physiotherapy, massage and rehabilitation. Employment specialists are profiled to help address problems of the musculoskeletal system and neurological rehabilitation. Services are available in Finnish and English. If necessary, provide interpreters in Russian.

TerveysFenix, Lappeenranta The centre specializes in providing outpatient care, prevention and rehabilitation treatment of patients with respiratory, urological and gynaecological dysfunction, as well as deal with health problems of the elderly.

Clinic Väaksön Lääkärikeskus Psychotherapy, sex therapy, reflexology, physiotherapy, advice on nutrition and health in the workplace.

YA University Pharmacy was founded in 1755, rapidly growing, including at the international level, the Finnish pharmacy chain with a high level of confidence among buyers. It includes about 50 stores in Finland, Estonia and Russia (St. Petersburg). Pharmacies are open late, and some even work 24 hours.

The service structure reform of the Finnish health care system (described in chapter 3.1.) is affecting strongly on the central hospitals in the South-East Finland which are suffering from too small catchment area and the lack of qualified doctors in special nursing sector. For example **Savonlinna Central Hospital** is supposedly going to lose labours and other special surgery treatments to Mikkeli Central Hospital since Savonlinna cannot offer the special nursing level demanded in the new health care act, which is going to take place in 2014. Since the quality of special nursing care is at high level and there has recently been a renovation of the surgery facilities, there have been discussions of widening the catchment area to North-West Russia in

order to maintain the special nursing services in Savonlinna. Of course having foreign customers using the services of public health care system demands a lot of planning and evaluating of the costs and effects on the service processes.

Well-being cluster companies of South-Karelia could be for example: **TreeniX, Lappeenranta** A centre which brings together sports facilities, physiotherapy, acupuncture, rehabilitation and recovery. **Spa Imatran Kylpylä** Imatra Wellness centre, where you can get all the conditions for the reduction of relaxation and health, including spa treatments, beauty and physiotherapy manipulation, various types of sports and fitness. **Spa Hotel Holiday Club Saimaa, Lappeenranta, Saimaa Gardens** A new Resort and Spa, which opened its doors in November 2011, Saimaa Gardens includes Water Park, Ice Palace, sauna world and spa complex. **Hotel Tallukka** is famous for its tradition of hospitality and it took a new course. Services are centralized around the theme of well-being and have been devised to ensure guests a comfortable stay in the complex Tallukka and full recovery of strength in the silence of the surrounding nature with the all the possibilities of relaxation and recreational activities, engaged in active leisure activities.

Well-being cluster companies in South-East Finland could be for example: **Bestwestern Spa Hotel Casino** located in Savonlinna and offering spa and recreational treatments as well as accommodation and restaurant services. **Anttolan Hovi** located in Mikkeli and offering day spa health treatment services, accommodation and restaurant services. **Kruunupuisto** at Punkaharju offering rehabilitation services and accommodation and restaurant services. **Tanhuvaara Sports Center** in Savonlinna, offering versatile facilities and services for sports and recreation. Co-location makes it easier to achieve product-service coordination and creates internal pressures for improvement of services.

In South-East Finland there are several companies working in the sector of well-being business. Many of them are still concentrating to appealing only Finnish customers, marketing only nationally and cooperating within the industry and tourism industry regionally if at all. Huge possibilities lie in joint marketing. Companies within a cluster are not direct competitors and in best case scenario rather serve different segments of the industry and that way are supporting each other. Clustering also

forms a constructive and efficient forum for dialogue and can lead to positive rivalry and innovations.

In Figure 3 has been described the possible cluster map of health and well-being industry.

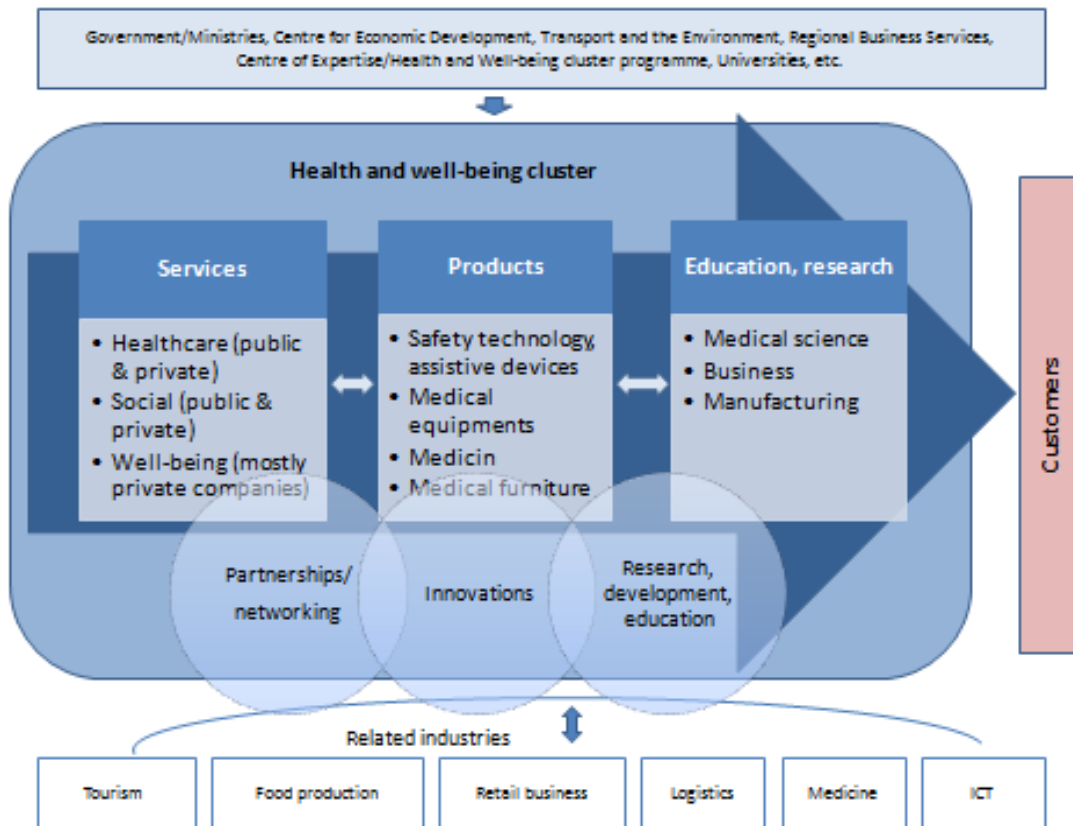


Figure 3, Health and well-being cluster map

Doing business in health care and well-being sector demands a wide knowledge of the business environment, the laws regulating the actions, of development of future demand, the municipals actions and public procurement procedures. The Finnish public business service system is highly advanced and coordinated. **The Ministry of Employment and the Economics, Centre for Economic Development, Transport and the Environment, the Employment and Economic Development Offices** as well as **Finnish Enterprises Agencies** serve e.g. communities, new businesses, firms developing their business and firms wanting to internationalise. There are several types of development and funding services available. **The regional business services** have also a remarkable role in helping companies to network and develop business. Many development projects are ongoing and clustering of

services seems to be a growing trend (see e.g. <http://www.hyvinvointi.fi/fi/english/?id=973>). Other important service providers are **Finnvera Oyj**, which offers financing for companies in start-up, growth, internationalisation and export stage and **Tekes – the Finnish Funding Agency for Technology and Innovation** which provides suitable development programs and funding for companies. All of these organisations also develop the ways how to integrate education and business life.

As mentioned earlier in this study **Ministry of Social Affairs and Health** leads the whole health care sector in Finland. **Ministry of Education** has its linkages to the health and well-being sector in student exchange issues (universities, universities of applied sciences, vocational schools), updating education, internships, research & development and in degree harmonisation. **Ministry of Foreign Affairs** serves this business area in form of offering market information and promotion of Finnish know-how and supply as part of the normal activities in promotion of export and internationalization.

There are also several other organisations serving businesses, for example trade associations, Regional Councils of South Karelia and South Savo, Finpro Oy, Invest in Finland, Finnish-Russian Chamber of Commers, Finnnode, Sitra – The Finnish Innovation Fund and Valvira - the National Supervisory Authority for Welfare and Health.

Universities of Applied Sciences (Saimaa, Mikkeli, Kymenlaakso) could be representing the clusters educational and R&D side. All of these schools already offer studies on social and health care sector as well as on business economics. Both of those sectors are in important role when developing the possible trans-border cluster between Eastern Finland and North-West Russia. Students are the futures key persons and the cluster companies and organisations should see them as an important resource. They should be committed to development of the cluster already when they are studying by e.g. involving them to research and development processes and giving them training opportunities.

6. Cluster diamond model

Porter's article of Location, Competition, and Economic Development: Local Clusters in a Global Economy has been used as source of information for the creation of a cluster diamond model.

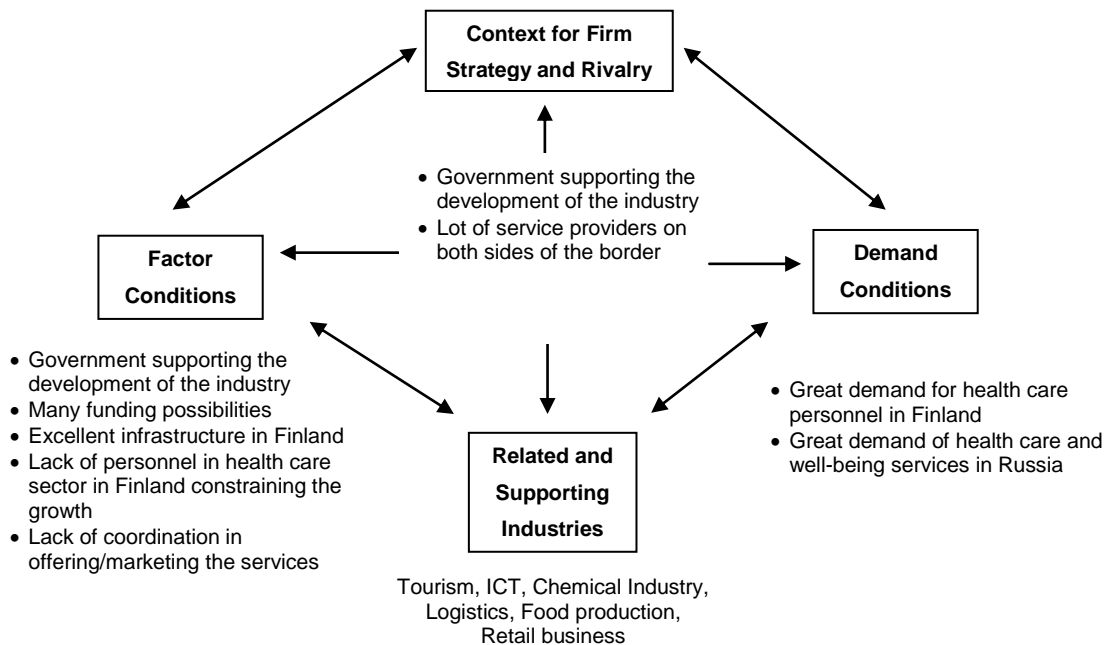


Figure 4, Cluster diamond model

Factor conditions

Cluster is characterized by uneven development of the structure and the weakness of the some elements of the "Diamond-model." However, there are marked competitive advantage and fundamental factors that contribute to the further development.

Positive role in the development plays government support on different levels. Operate various government and cooperative sector development, as mentioned in the text above. In addition, the sector is characterized by a high level of investment, both private and public.

The strengths of the Finnish economy are innovations, education and health care system as well as coordination among different institutions. The country has a low level of inflation in comparison with other countries of the European Union.

Traditionally in Finland, there is a high standard of living. All of these factors directly affect the development of health and well-being sector.

It should be noted the highest level of R&D. As mentioned the country has a highly developed network of scientific research centres and institutes. The situation in the labour market is unstable at present. Due to the aging of the population is projected outflow of labour from the industry. Over 100 000 people will retire from the industry after a few years. But on the other hand, it can be considered as a prerequisite for cooperation, as one of the scenarios address - attracting staff from abroad, cooperation with foreign (including Russian) schools and language centres.

Another drawback of the present situation is the lack of any centralized coordination in the sector. But the beginning of a solution is a big number of treatment portals (Finnish and Russian). An important step is the Finlandcare programme.

Context for Firm Strategy and Rivalry

Finnish border region has a number of competitive advantages. Proximity to the border plays a fundamental role. Good transport infrastructure helps in attracting customers. On both sides of the border are a lot of companies interested in the internationalization of its services. Traditionally, the health sector in Finland has been focused on the domestic market, so now, with a huge increase in demand from abroad, many companies are learning to work for export. Most of them are narrow specialized and in this case, the release may be a separation between service companies, which for their part will lead to the support and cooperation.

The language barrier is still existed. But in the border region have a tendency to learn Russian, many companies offer their services in Russian, is anywhere you can get service in English.

The public support system in Finland is well organised and developed. There are many organisations helping companies and as well as the public sector to meet the future's challenges and the pressures of changing economy.

Related and Supportive Industries

The most important factor of modern competitiveness clusters is the high level of cooperation with the related institutions and industries. And, of course, the development of related industries positively affects the development of the health and well-being sector.

Finnish pharmaceutical and biotechnology industries are in constant development with a large amount of funding.

Finnish ICT industry is one of the most advanced in the world. Because of this there is a possibility in the medical sector to use the latest technology and improve efficiency. From the productivity of its specialist hospitals to introducing electronic prescriptions and advanced technology for artificial voice production, developing systems for Connected Health to thousands of other innovations.

Development of **transport infrastructure** also contributes to the competitiveness of the sector. Beautiful roads in Finland make travel around the country very comfortable. The problem of queues at the border is partially solved with the launch of high-speed trains and the new border crossings. And apart from Lappeenranta airport transport functions has also the function of attracting Russian tourists to the city. There are nearly 200 destinations around the world, and the total annual passenger traffic is 116 thousand people. Of these, about 50% - Russian, still 40% of the Finns themselves, and only 10% are foreigners. Russians are the largest category of **tourists in Finland**. In 2011, tourist arrivals increased by 27% to 3.3 million. During the year the Russians left there 0.9 billion Euros. And Finland has included in its profile another form of tourism – medical tourism. Two other industries closely related are **food production** and **retail business**. Both serve the health and well-being as well as tourism industry and by joint marketing new customers could be attracted.

Demand Conditions

Finland is a country with a rapidly aging population. This raises a number of issues and demands. Firstly, in this situation, is needed to increase the number of service of medical personnel. But in a few years a huge number of staff working in the sector

will retire, and then a bunch of lack of employment will rise especially sharply. Secondly, it is needed to develop anti-aging innovations.

On the other hand, the demand for medical services increases from abroad. Finland aims to create ideal conditions for patients from Russia. Demand in this sector is growing significantly. By the end of the decade, analysts expect the Finnish market expansion of medical tourism to Russia in three times. In 2011, the services of medical and pharmaceutical institutions of Finland took advantage of about 12 thousand tourists. That same year, the country was visited more than 3 million Russians, spending more than 890 000 000 Euros. Of these, the net profit from treatment of the Russians amounted to 15 million Euros. Finnish analysts suggest that by the end of the decade, this figure will triple (Treatment abroad medical portal).

7. Conclusions

7.1. Main results

In the beginning of determining the possibilities of Finnish-Russian trans-border cluster we found out that the sector of health and well-being can be divided into four main categories: health care services (public and private), well-being services, education and research (medical science and business economics) and production of health related products (medicines, surgical instruments, devices, furniture etc.). In this cluster study we have concentrated mainly to the service production and education/research sector.

The most important element in the future of health care and well-being service industry is that the aging of population is causing a growing demand on the industry and at the moment domestic supply is used mostly by the Finnish people. There is a lot of interest in internationalising among the operators and the possibilities are huge in the future. The Finnish service level is noted as good among people who already know the service possibilities. Know-how, expertise, safety and infrastructure on health and well-being sector are highly valued even though not widely recognised internationally.

Nowadays Russians are already using health and well-being services of the border region and the rest of Southern Finland. Most customers come to Finland for cancer treatment, prenatal services, surgery and dental care. Preventive health care (e.g. breast cancer, diabetes) is still in child's shoes in Russia and it could be one of the future's growing sectors marketed for them.

Internationalisation has positive effects for the sector's competitiveness. It gives a possibility to develop health care practices and urges operators to improve their services on the customer oriented way.

A great challenge to the industry's development is the lack of personnel resources. By the year 2020 over 100 000 people are retiring from the health care industry and long-term strategic development must be done in order to response to the future's development in time. The working life needs to be arranged in a way that encourages and supports people to continue their careers over the normal retirement age and labour needs to be recruited from abroad. That sets expectations for the cooperation between the government, regional development organisations and public/private sector companies and hospitals in order to evaluate the demand of manpower from 2020 and forward.

Also requirements for the sectors future are high concerning: technological development (e.g. in patient care, assisted housing), rise of expenditure (e.g. labour costs, taxes, materials, logistics, technology) and in organising the social and health care services as part of the service structure reform.

In Finland there are a lot of good quality well working support systems available. There are several national and regional organisations supporting the health and well-being industry. More local coordination is needed to create working innovation and development structures for long-term. Today development cooperation is mainly done in projects that last on for few years.

Finland and Russia have mentally got closer to each other and crossing the border has become more common. Still a person's health is such a personal matter that the service must available easily and safely. Today for example the Russian bureaucracy, long border formalities (when travelling by car), language barrier and the legislation securing document safety are diminishing the willingness of Russians

using the Finnish health and well-being services. These obstacles should be removed by organising the accessibility better via a service operator who would coordinate the whole process when customers are coming to Finland.

Our opinion is that there is lot of potential to create a working health and well-being industry trans-border cluster between South-East Finland and North-West Russia. There are a lot of potential operators who would benefit of cooperation. Our recommendations for the future cluster development are described in chapter 7.2.

7.2. Recommendations for the future cluster development

The Finnish border region cluster of health and well-being industry would be formed of the following participants: companies that offer health and well-being services, central hospitals of the border region, private clinics, regional business development organisations, regional councils and universities of applied sciences (Saimia, Mikkeli, Kymenlaakso), research and development organisations (Centre of Expertise/Health and Well-being cluster programme, University of Eastern Finland) and pharmacies. Cooperation of these parties would form a development and discussion base, which is aiming to:

- support participants in exporting services (meaning Finns producing services for foreign customers and income flow is towards Finland) to Russia by creating joint operation models,
- find development needs of the companies, public sector and education,
- productize services (taking into account customer orientation) and
- discover innovations and spreading information to the cluster parties.

All these actions are aiming to increase productivity of the border regions health and well-being industry by creating a long-term strategy taking into account the future needs of the industry and the changing environment. That way the sector has an opportunity to grow as a remarkable branch on national and international markets. The main role of a health and well-being cluster is to support the branch's companies internationalisation, growth and development.

A cluster needs an organisation that is willing and able to coordinate the cluster's work. Regional development agencies of Lappeenranta (Wirma Lappeenranta Oy) and Savonlinna (Business Services) could take this role since they already have

good connections to all parties. A joint leading responsibility would create a structure that crosses the provincial borders. Both regions have a great interest towards Russian customers and also pressures to develop the structures of health care industry. Forming a cluster would give the industry a good base for cooperation's continuity. In the beginning the strategic development object would be defined and the main development themes chosen. Such themes could be for example: marketing, financing, productizing, and anticipating markets, trends and education needs.

By forming a cluster the border region partners could a) anticipate the futures labour issues, demand, supply and service markets, b) discuss of joint development lines/goals, build up trust and cross sector boundaries, c) recognise needs and initiatives, d) follow up and coordinate R&D, e) find out innovations and create new service models after recognising development needs. Cluster also works as discussion forum between public and private sector in developing functioning service entities.

In the future Finland is going to lack trained personnel on healthcare sector so it would be worth of investigating to try to get labour force from Russia. That kind of development route needs a lot strategic planning and demands good cooperation between the industry and the education system in Finland and in Russia. Getting work force from abroad would also make the Finns working careers more equitable than they are now. Many hospitals are already using retired people to cover up temporary posts, because of the resource shortage.

One obstacle for having foreign work force in Finland is the language barrier. Especially nurses and doctors need to have proper and proved language skills before working in Finland. More opportunities of studying Finnish in Russian schools (on health care and business administration sector) should be offered and also encourage students for student exchange between countries. Also the health and well-being sector in Finland is in great need of personnel who are skilled in Russian language in order to get Russian customers. Many actions towards teaching more Russian in schools have been made already, but that work needs long-term commitment and so does the attitude education. In a cluster these kinds of issues could be discussed and advanced in cooperation between the cluster parties.

In order to attract Russian customers to Finland joint marketing (e.g. via internet or trade fares) and brand developing is needed. Border region could be profiling as a safe, clean and easily accessible health and well-being region. Marketing efforts of a single company are usually ineffective. By joining forces more remarkable operations can be done and cluster participants don't necessarily be competitors of each other but complementing each other's services. Buying of services should be made as easy as possible and the cluster could organise an operator who would take care of the related services outside the actual health care treatments (e.g. travel arrangements, documents needed, invoicing). That would lower the threshold for the customer as well as for the actual service provider (hospitals, clinics, well-being businesses).

Cooperation between health and well-being cluster and other related clusters (e.g. tourism, logistics, ICT, in vitro diagnostic industry) should also be one part of the cluster's work. It would give different branches a good discussion place for forecasting the future needs and changes and an opportunity to prepare for them in beforehand.

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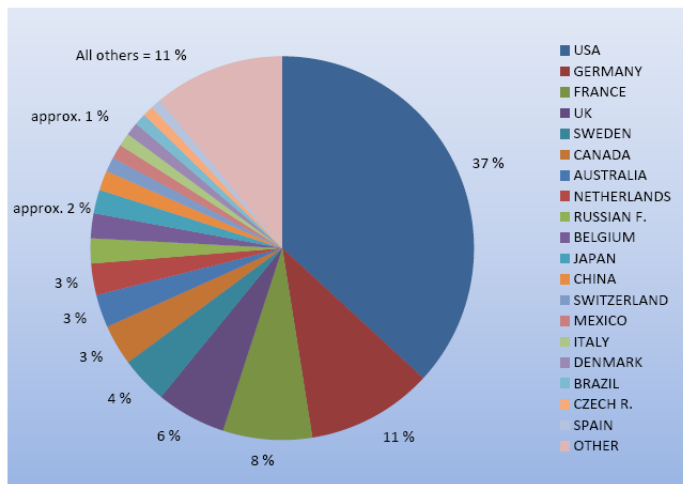


Figure 1. Exports of health technology equipment by country in 2011, Donovan S.

Strengths	Weaknesses
<ul style="list-style-type: none"> - location - standard of services - social stability of Finland - R&D - lot of public services and funding available - high education level - high expertise - safety, cleanliness - supporting industries 	<ul style="list-style-type: none"> - language skills - lack of employees - ageing of population - services not well recognised yet - no big scale marketing efforts - actions usually short projects, lack of long-term commitment - prejudice towards foreign service providers or customers - services hard to productize - queues to the doctors - bureaucracy -

Opportunities	Threats
<ul style="list-style-type: none"> - huge market area close by - cooperation with cluster participants + long-term development strategies - getting labour from Russia - rise of welfare and purchasing power at Russia - Russians living in Finland - joint marketing - opening of the Parikkala international border crossing - exemption from visa between Finland and Russia - cooperation with related clusters 	<ul style="list-style-type: none"> - lack of labour - rivalry with Southern Finland - delayed actions - economic depression

Figure 5. SWOT analysis of the border region concerning health and well-being cluster

MINISTRY OF EDUCATION AND SCIENCE OF RUSSIAN FEDERATION
SAINT-PETERSBURG STATE ECONOMIC UNIVERSITY

Department of International Economic Relations

**THE POSSIBILITY OF CREATING RUSSIAN-FINNISH CLUSTER IN
«HEALTH & WELL-BEING» SECTOR**

International Economy Master Program, 2nd year

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National competitiveness (country diamond model by M. Porter) + competitiveness of the border region

1.1 Position of Russia

Russia (Russian Federation) - the largest state by area in the world (17.1 million km²). Russia is located in the northern part of Eurasia. The European part of Russia (about one third of the country) is a large part of the Russian (East European) plain, and the Urals, the Caucasus and the northern slopes of the Greater Caucasus. The Asian part of Russia (about 2/3 of the territory) includes Siberia and the Far East. The length of Russia from west to east is 9 thousand kilometers. Extreme western point is near the city of Kaliningrad (19°38' E), and the extreme eastern point on the continent - Cape Dezhnev (169°40' W).

Opportunities of economical-geographic position are largely determined by transport and geographical position of the country. The Russian Empire and the Soviet Union had four main exits to the ocean: first, the Baltic, "cut through" Peter I in the XVIII century (St. Petersburg, the Baltic ports), and second, the Black Sea, and, third, the North, and fourth, the Pacific. With the collapse of the Soviet Union, the formation of independent states Russia remains first two outputs - the Baltic and the Black Sea. In Russia from the major ports were the Baltic Sea port, St. Petersburg (Leningrad) port, and small-capacity Vyborg and Kaliningrad ports (the port of Vyborg is partly used by Finland, while Tallinn, Ventspils, Riga, Klaipeda steel ports of the newly independent states). A similar situation developed in the Black Sea-Azov basin, where Russia has only two ports of Novorossiysk and Tuapse. At the same time, the ports of Ukraine (Odessa, Illichivsk, Kherson, Izmail, Mariupol), and the ports of Georgia are calculated on numerous loads of other CIS countries, especially Russia.

1.2 The structure of the economy

The main sectors in Russia are the following:

1. Mining operations 9,1 %
2. Agriculture 3,6 %
3. Building 5,5 %
4. Trade 16,2 %
5. Industry 13,6 %
6. Services 14,0 %
7. Transport 7,5 %
8. Healthcare and medicine 5,7 % [5]

Among all industries in Russia the most powerful are the following: electrical and optical equipment production, chemicals, manufacturing, energy minerals production, pulp and paper production (forest resources are the largest in the world), metallurgical production, production and distribution of electricity, gas and water supply (according to 2006 [6]. Russia is a 6th economy in the world in terms of GDP PPP (in 2012). The nominal GDP in 2011 Russia was ranked 9th place. Russia's nominal GDP in 2010 amounts to 44.5 trillion rubles, PPP GDP - \$ 2.23 trillion. Russia occupies 54th place due to nominal GDP per capita in 2010 according to the *International Monetary Fund*. The share of the Russian economy in the world economy in 2012 is 4.1%.

1.3 The unemployment rate

The unemployment rate is one of the main characteristics describing the economy of region. Almost always it is believed that the higher the unemployment rate, the worse the economic situation and lower living standards. Russia is a vast country consisting of 83 federal entities – the republics, territories, countries, regions and cities of federal significance. Each of these regions has its own history, government, resources, population and the economy, and, therefore, the unemployment rate in each region is different.

Below there are average statistics for the whole country.

The unemployment rate in October 2012 was 5.33%, unchanged at 0.1% as compared to September 2012 (5.23%) and – 1.07% compared to October 2011 (6.40%). The economically active population in October 2012 was 75, 525, 000. Change was – 647, 700 (-0.85%) compared with September 2012 (76 172 000) and – 75 000 (-0,10%) compared to October 2011 (75 600 00). Of the total number of economically active population 71 502 000 were employed, and the number of employed persons was changed to – 685 000 (-0,95%) compared with September 2012, when there was 772 187 000 people

employed, and 702 000 (0,99%) compared to October 2011, when 70,8 million people were unemployed. At the same time, the number of unemployed in October 2012 was 4 023 000. The change was 38 000 (0,95%) compared with September 2012 (3 985 million) and – 777 000 (-16,19%) compared to October 2011 (4,8 million) [7].

1.4 Scientific potential

Russia has a sufficiently large scientific potential. In the research, design, development organizations employing about 800 thousand people, including nearly 104 thousand doctors and candidates of sciences. The scientific works 1.2% of total employment in the economy. Today in Russia there are less than 1/10 of all the scientists and engineers, developers of the world, whereas in the U.S. - 1/4. [8] However, the actual cost of a ten-fold reduction in science (to less than 1% of GDP) to education, along with the lack of trade skills scientific production gradually deprive Russia of the main sources of modern economic growth - intellectual capacity. Russia's share in the global high-tech market is estimated at 0.5% (U.S. - 40), although according to objective criteria domestic engineering and today still retains a leading position in the world for macro-technologies, often unique, especially in the aircraft industry, space industry, superconductor and laser technologies, shipbuilding and energy engineering. Insufficient funding forced to perform scientific orders from foreign companies, working on grants. Moreover, the number of theses defended by Russian scientists, increased 4-fold, 2.5-fold increase in the number of graduate students. From the sphere of science over the years it took about 20-25% of the scientists with a PhD [9].

The main directions of the state policy innovative - supporting technical and technological innovations, including the territorial context - are:

- 1) a system of its comprehensive support, production development, competitiveness and exports of high technology products;
- 2) infrastructure development of the innovation process, including the information support system expertise, financial and economic system, production and technology support, system certification and promotion of development, training and retraining;
- 3) implementation of critical technologies and priorities that could transform the industry and regions, including the choice of the largest number of new basic technologies that have a decisive impact on improving efficiency and competitiveness of the products, the transition to a new technological system;
- 4) the use of dual-use technologies (for production of military equipment and civilian products), etc.

However, as production capacity, scientific potential is concentrated mostly in the European regions. It houses more than four fifths of scientific personnel, including more than half - in the central and north-western regions. The increased proportion of scientific and educational sectors characteristic of the North-West, Central, Volga-Vyatka, East Siberian regions. Urals and Western Siberia highlighted the training of specialists with secondary and higher education. Placing research institutions in different fields is specific, due to the peculiarities of organization of science. When creating them usually guided by factors distribution of productive forces - to institutions specializing in the research theoretical profile, the essential condition of accommodation is close to the major scientific and information centers and to the system of higher education institutions, and for institutions, leading application development - the proximity to the leading companies in the industry and authorities management.

Research institutions engaged in fundamental works are concentrated in the largest economic and cultural centers, especially in Moscow, St. Petersburg, Novosibirsk and other cities. Industrial research institutes application profile placed evenly and tend to the production bases of their industries, although most of them are still located in the central areas, and offices and branches - on the periphery. Accommodation research and production associations, scientific and technical centers associated with major industrial center, where you can connect the efforts of scientists and producers. They are presented not only in Moscow, St. Petersburg, Nizhny Novgorod, Samara, Yekaterinburg, but in a less significant centers - Voronezh, Penza, Serpukhov, etc. Major cities, industrial and administrative center - Moscow, St. Petersburg, Nizhny Novgorod, Samara, Yekaterinburg, Omsk, Novosibirsk, Krasnoyarsk, Irkutsk, etc. - are the leading research centers in Russia. Leading design institutions involved in the design of large industrial enterprises, highways, waterworks, etc., as well as carrying out work on the general plan of the city and regional planning, as a rule, are located in Moscow, St. Petersburg and other major centers.

In general, placing both scientific and production potential is in the sphere of interest of the economy. However, its territorial organization has serious drawbacks. Still much of the scientific personnel, particularly highly qualified, is concentrated in the capital of Russia (almost half of doctors), as well as in other major European cities. Insufficiently developed network of research institutions in the Volga, Volga-Vyatka, North Caucasus regions, and in Siberia and the Far East are poorly represented in applied research and design work. [<http://www.grandars.ru/shkola/geografiya/nauchnyy-potencial.html>]

1.5 Russia's export

According to the *Federal State Statistics Service* and the *Federal Customs Service*, Russia's foreign trade grew by more than a 3d of reaching 821 bln. dollar in 2010. And judging by the rate of growth, the bar at 1 trillion dollars will be achieved in 2012. Russia's main trading partner is still China, foreign trade turnover between Russia and China increased by over 40 % compared to 2010 and exceeded 10 % of the trade balance of the country. The top 10 trade partners of Russia in 2011 is unchanged relative to 2010 strives growing foreign trade turnover with Ukraine, which has become our 4th largest trading partner, surpassing Italy. But the volume of foreign trade with our 2d partner in the Customs Union – Kazakhstan, is opposite precarious. Kazakhstan remains the 14 largest foreign trade partner. Even more discouraging foreign trade turnover with CIS countries, as the volume of trade with the Tajikistan decreased by 8,6% [9].

The growth rate of imports of goods in 2011 again exceeded the growth rate of exports, but the volume of exports in value terms is still significantly higher than the import volume – 516 bln against 305 bln.dollars. The structure of exports continues to increase the share of energy products. At the end of 2011 it amounted to 69,2% of Russian exports. In 2011 Russia became again a world leader in the export of hydrocarbons. In the neighboring countries 242 mln. tones of oil and 201 bln. cubic meters of gas and 1254 mln. tones of oil products were sent. State revenues from this type of exports amounted to nearly 322 bln. dollars, an increase by more than a third compared to 2010. In the future Russia expects only to increase these figures. The share of machinery and equipment imports increased to 48%, while the share of food and agricultural products in the structure of Russian imports and reduced contrast in 2011 was no more than 14%.

Competitiveness of a border region

The North-West part of Russia is particularly attractive for the EU countries. It is rich in raw materials and human resources, historical and cultural sites. It is also characterized by cultural integrity of its people, advantageous geographical location, as well as natural diversity facilitating the development of tourism and eco-tourism.

As for the challenges investors are facing in Russia these days, the main obstacles to investments are red-tape, imperfect legislation, incompetence of local authorities, poorly developed infrastructure and the flawed fiscal system. At the innovation stage, the region should demonstrate the level of economic innovativeness that ensures economic self-renewal, adaptation to the changing market environment as well the ability to generate research and technological innovations, encouraging the region to reach a new quality level [4].

The intensity of the cluster formation in St. Petersburg is very vital theme. Firstly, the Northern Capital - a global city, which means a high level of business services (availability of business-centers of all classes of sites for placement production, a significant concentration of financial services), and the opportunity to highly qualified personnel (availability of quality urban environment, the ability to provide adequate wages). The geographical position of St. Petersburg greatly simplifies the process of networking with potential partners, particular to the major medical and pharmaceutical research centers and clusters Scandinavia. In other words, being the second largest metropolis of Russia, a city on the Neva is attractive venue for all possible activities. Secondly, an important feature of St. Petersburg - the concentration of a huge number of research centers in different fields directly related to the topic of sciences. There are about 30 research institutions in the field of medicine (and about 50 clinical departments, related oncology diagnostics and cancer therapy), not less than ten research centers involved in the development of new materials, more than 70 companies working in the field of nanotechnology, and eight major centers for collective use of the relevant subjects [4]. But, the Northern capital comprises a large number of research institutes and design offices with competence in complex engineering: in Soviet times Leningrad in fact, was one of the design development centers. Finally, there are enterprises owned by large companies nationwide level state corporation ("Rosatom" United Shipbuilding Corporation "Russian Technologies", etc.). This complex of industrial enterprises related to intensive, innovative industries can generate significant order for new

technology. Thirdly, it is important that St. Petersburg has significant experience in developing all formats of the supporting infrastructure for innovation. In the city a significant number of production areas with approved project planning and performance that meet a wide range of requirements (on infrastructure provision, location, connection to thoroughfares and ports). It is planned to create a modern industrial parks to special economic zone, industrial parks like IT-park "Ingria". Finally, there are strong specialized higher educational institutions that provide training and develop special research competence. Medicine, pharmacology, radiochemistry, nuclear physics, nuclear medicine, and engineering staff - in fact, the full range of educational and scientific activities of the cluster closes universities - participants and partners cluster.

Geo-economic position of North-West region

Economic and geographical position of the area - a seaside, very profitable. The area is located between the European states such as Finland, Estonia, Latvia and the Central economic region of Russia. North-West area - it is a small area on the coast of the Baltic sea, the rivers and lakes of the area held an ancient trade route "from the Varangians to the Greeks". The climate is temperate continental, on the coast - the sea, for the whole area is characterized by podzolic and peat soils. There are about seven thousand lakes, the largest - Ladoga, Onega, Chud, Ilmen. Neva river (74 km) is one of the highest water in Russia. Minerals - refractory clay, shale oil, bauxite, phosphates, quartz sand, limestone, salt springs. The main socio-economic conditions of the region: a favorable economic and geographical location, skills, science and culture, development of experimental design framework. North-west is an industrial area with the development of a complex manufacturing industries, with a high proportion of engineering that focuses on imported raw materials and fuels. Industry expertise - engineering, highly skilled labor, non-ferrous metallurgy, chemical industry and light industry. Engineering of the district is characterized by intra-developed connections.

Machinery industry: energy, shipbuilding, instrument, machine. North-West area - it is a major supplier of equipment, tractors, automation equipment, turbines.

Production of power equipment: generators and turbines for hydroelectric power stations, power plant, nuclear power plant is represented by enterprises in St. Petersburg. Developed shipbuilding, "Admiralty", "Baltic" factories of St. Petersburg has atomic icebreakers, ocean freighters, etc.

High-tech industries are instrument making, radio engineering, electronics, electrical engineering (St. Petersburg, Novgorod, Pskov).

Chemical industry of St. Petersburg was an example in the production of polymers, plastics, pharmaceutical industry in Russia.

Development of light industry. A number of industries of the North-West district based on local natural resources (mining phosphate rock and the production of these fertilizers, production of refractory bricks from local clay, mining and production of building materials, mining of oil shale).

Scientific potential of North-West region

North-West Federal District (North-West), especially St. Petersburg, has significant scientific, innovative potential and highly qualified staff of researchers and developers. Established in Russia, including the North West, innovation is needed not only in national but also in intensive foreign markets. On the other hand, the international experience of innovation can be used to solve the problem of creating a well-functioning Russian national innovation system. Finally, some problems of innovative development can be solved by joint efforts in the implementation of international projects with Russian and foreign partners. All three these aspects are very important for the modernization of Russia and the countries with raw materials for innovative development.

According to the experts of the Institute of Regional Economy (St. Petersburg), one of 20 Russian regions with the highest integral competitive potential in 2005 is the Northwestern Federal District. Saint-Petersburg, Leningradskaya oblast, Vologodskaya oblast, Kaliningrad region are classed among the leading regions for innovative development.

Northwestern Federal District in Russia has quite high positions of innovative potential, but the average level is inferior compared to innovation in the economy. Thus, its share of the Russian population is 9.5%, in the manufacture of GDP - 9.9%, in the manufacture of goods manufacturing industries - 12.0%. Higher and the share of spending on research and development - 13.6%. In 2008, the district created 13.5% of advanced technology. Close to the proportion in the population share of the Russian North-West in the number of organizations implementing technological innovation

(10.6%) and the share of expenditure on technological innovation (9.6%). However, the share of patents in NWFD is lower - 8.5%, and the district is only 8.1% of the volume of innovative products and services [1].

In the second half of the 2000 in North-West, as in the Russian Federation as a whole, there has been a positive growth trend of innovative activity of economic entities. The number of created around advanced technologies increased from 103 in 2005 to 158 in 2009, or half as much and has grown in three years by almost a quarter (23.8%) with 10,901 units, in 2006 to 12,494 units, in 2008 for 2007-2008. volume of innovative products and services in the North-West has increased by 12% (from 79.6 billion rubles. in 2007 to 89.1 billion rubles. in 2008). However, the dynamics of indicators NWFD behind the national average, especially those that reflect innovation. So, if the whole of Russia expenditure on technological innovation for the 2000 - 2008 years. increased almost 5 times, in North-West - 4 times. The volume of innovative products and services in the Russian Federation for the period increased by 7.1 times, and in the North-West - only 2.2 times.

Leading position in the North-West in terms of innovative activity is St. Petersburg, the overall level of innovation activity of Industrial Engineering is 15.3% against 10.0 in the North-West and 10.7% in Russia. St. Petersburg is superior to all other members of the North-West and in most other areas, reflecting the innovation as the main focus is the capacity of research organizations. In the combined groups of subjects on the North-West by some as absolute or relative terms, innovation St. Petersburg is a separate group. Only at the costs of technological innovation per capita is second Karelia, Murmansk and Novgorod regions. Lagging behind in all indicators are in the North-West and the Pskov region (except for the number of people engaged in research and development per one thousand inhabitants) Nenets [2].

Export/import of North-West Region

North-West Federal District (North-West) is one of the most economically developed regions of the Russian Federation, which produces 10% of Russia's GDP. It also provides 11% of Russian industrial production and 6% - agriculture. The region's population of nearly 13.6 million people, 83% of whom live in urban areas (the highest level of urbanization among federal districts).

St. Petersburg dominates the region's economy, producing 43 % of the total GDP. The city also has the highest concentration of small and medium business in Russia. The strong economic performance of the Leningrad region is a part the result of intensive foreign investment.

Industrial production has played a leading role in the economy of North-West, with more than one third of its GDP. The most important industries of the district are: machinery, metallurgy, chemical and wood processing industry. Other important economic sectors - wholesale and retail trade (15 % of regional GDP), transport and communications (11 %) and construction (8 %). Industrial output in 2011 increased by 5.3 %, a slight increase of the national growth was 4.7 %.

In January - September 2011 the foreign trade turnover in the North-West has grown by 42 %, reaching 79.2 billion U.S. dollars. Exports amounted to 40.4 billion, while imports - 38.8 billion U.S. dollars.

In the first six months of 2011, investors have invested more than one billion dollars of direct foreign investment in the Northwestern Federal District. The main recipients of these investments are St. Petersburg and Arkhangelsk region with 377.9 million and 292.1 million, respectively.

The average unemployment rate in the North-West in the 3rd quarter of 2011 amounted to about 5%, and stood at 6.2 % nationwide. The lowest unemployment rate in St. Petersburg and the Leningrad region, where it is 1.6 and 3.0 percent respectively. The highest unemployment rates were recorded in the Murmansk region (10 %) and the Nenets Autonomous District (9.7 %) [10].

Demand conditions

Russian law established the principle of insurance health care financing. In 1993, in addition to the fiscal health system was a system of compulsory health insurance (CHI). Since 1998, the Government of the Russian Federation adopted annual program of state guarantees for Russian citizens free health care provided at the expense of the budget system of the Russian Federation. Starting in 2005, the Government of the Russian Federation approved annually by the financial regulations for medical assistance per person (per capita financial ratios). The costs of providing free

healthcare from public funding in 2007 was 897.3 billion rubles and at current prices it is increased by 3.8 times compared to 2001.

Principles of public healthcare

- Public nature - allocation from the national budget on health care, planning, development of logistics, human resources and health financing
- Free and universally available

Preventative

- Organization of social-economic and health interventions to prevent disease
- Monitoring of compliance with hygiene regulations
- Health education and promotion of healthy lifestyles
- Coverage of the population dynamic observation
- The unity of theory and practice, treatment and prevention
- Continuity of medical care
- public character
- internationalism

The World Healthcare Organization report, "World Health Statistics 2010" on key indicators of health care financing in Russia in 2010:

- ✓ Health expenditure - 4.8% of GDP
- ✓ The share of public health expenditure - 64.3% of total expenses
- ✓ The share of private expenditure on health - 35.7% of total expenses
- ✓ The total government expenditure on health - 9.2% of the total annual budget of Russia
- ✓ Share of the costs paid directly by the population - 81.3% of the amount of private spending
- ✓ Total expenditure on health per capita - 985 international dollars at purchasing power parity
- ✓ Public expenditure on health per capita - 633 international dollars at purchasing power parity
- ✓ Private expenditure on health per capita - 352 international dollars at purchasing power parity

Today, the health care system of the Russian Federation, despite some achievements of the past, has serious problems that decrease the availability and quality of medical care. Underfunding of the public health system is at least 1.5 times. There is not enough funding - no decent payments to medical personnel, not enough people to ensure free medicines, it is impossible to comply with modern standards of care and provide hospitals with modern equipment and supplies. For example, in the Russian Federation in 2011, public expenditures on health (including the cost of the program of state guarantees, education, investment in infrastructure and sanitary-epidemiological well-being) totaled 1.7 trillion rubles. or 4%, the share of GDP, a 1,5 times lower than the average of the "new" EU countries (6% of GDP). It should be noted that these countries are close to Russia's GDP per capita in the year - about \$ 20 thousand PPS [11]. More funding for health care allows these countries already have a life expectancy of 76 years, i.e. even better results than the ones we want to achieve by 2020, from this it follows that the further expansion of the volume of free medical care will require funding by 1.5 times, which is about 800 billion rubles annually.

Related industries

Russian manufacturers of medical equipment

In Russia, the license to design and *manufacture medical equipment* has about 1,500 companies. Domestic manufacturers are offering wide range of products that can compete with foreign counterparts. The list includes equipment for X-rays, electrocardiograms, operational equipment, sterilizers, anesthesia and respiratory devices, equipment for functional diagnostics.

The company "Aeromed" manufactures Anesthesia Equipment, LLC "Altonika" develops and produces high-tech electronic devices, LLC "Fotek" specializes in equipment for surgery. Doschatinsky medical equipment factory for 75 years produces sterilization and lighting equipment, and medical furniture. Variety of specialized products from different vendors can provide the latest medical equipment in St. Petersburg, Moscow, Yekaterinburg, Novosibirsk and other cities and regions of the country [12].

Russia takes second place in the world according to the rate of growth of *the pharmaceutical market*, ahead of China and conceded only Brazil. The attractiveness of the pharmaceutical market

today is supported by a number of digits. Over the past few years it grew by at least a quarter of a year, and now is one of the fastest growing in the world. According to the Ministry of Trade, last year it amounted to about 300 billion rubles. Analysts suggest that even with slower growth by half by 2011 the market could reach 400-500 billion rubles.

Currently, pharmaceutical companies are facing increasing competition in the market, leading them to seek fundamentally new model of development, a new philosophy of existence in a changing health care system, new principles of relations on the market. The share of the top 20 manufacturers now account for about 45% of the world pharmaceutical market. The overwhelming majority of drugs (75%) entering the global pharmaceutical market, produced a relatively small number of countries (USA, Japan, Germany, France, Italy, Great Britain, Canada, Switzerland, China, India, Brazil, Mexico). Meanwhile, the share of developing countries in world production of medicines in the last 5 years has increased dramatically and reached about 20%.

The pharmaceutical industry in Russia includes the following sub-sectors:

- finished dosage forms or form;
- drug substances and preparations based on microbial synthesis and other living systems;
- vitamins and medicines based on them;
- synthetic drug substances and biologically active substances with medicinal properties, obtained by chemical synthesis;
- antibiotics;
- medicines from raw materials of natural origin;
- medicines and diagnostics, biotechnology derived methods, including blood products, hormonal and endocrine products derived from biotechnology and animal materials.

There was about 350 companies licensed to manufacture drugs in this industry at the beginning of 2008. In this case, the 10 largest plants accounted for over 50% of all drugs produced in Russia. The real potential of drug consumption, produced a national industry is not more than 10-15% market value and not more than 50-60% in the commodity [13], which indicates a trend towards further lag of the Russian pharmaceutical industry.

The main trend in 2011 can be called the formation of a "pharmaceutical clusters." This process takes place in the framework of the Strategy for the Development pharmaceutical industry until 2020. Another significant event in 2011, which will soon be reflected in the pharmaceutical market, it was the signing of documents on Russia's accession to the WTO.

Russian pharmaceutical market is among the ten largest pharmaceutical markets in the world. In 2011, Russia took the 8th place. The volume of the pharmaceutical market in Russia in 2011 amounted to 824 billion rubles, which is only 12% more than the figure in 2010.

The Russian pharmaceutical market is import-oriented. 76% of drugs in terms of money, which are consumed by the public, are produced abroad. Therefore, the first place in the ranking of manufacturers occupied by foreign companies: SANOFI-AVENTIS, NOVARTIS. On the third line is PHARMSTANDARD - the only domestic producer of the top-20 players in the pharmaceutical market of Russia.

The importance of the wholesale level remains very high due to the geographical features of Russia. Large distributors support numerous network of branches and representative offices. Smaller wholesalers are also beginning to create an extensive network of warehouses (eg, FC PULSE, Imperia Pharma). Leaders in the distribution segment up to 2011 are "SIA International" and "Protek CV." Their combined share of the total market is 33%. Grow at a rapid pace Distributors R-Pharm, Biotech.

As predicted by DSM Group, the Russian pharmaceutical market will grow in 2012 by 10% in rubles and will reach 910 billion rubles [14].

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II. Assessment of national institutional and business environment for the particular trans-border cluster (separate part) – PESTLE analysis is possible

The sphere of health care includes many types of activity and a number of the markets. Here we will consider mainly the health care markets, mentioning closely with them connected, but nevertheless the isolated pharmaceutical market.

It is necessary to determine the market of health care for more complete understanding of the external conditions operating on it. And so, product differentiation in any market creates preconditions for emergence of the market power at suppliers. The less their interchangeability from the point of view of the consumer, the his costs of switching, and consequently, and the market power of the supplier will be higher. For the market of out-patient services in the large cities (geographical boundaries of these markets match, as a rule, borders of city settlements or rural districts) the structure of the market can be characterized as monopolistic competition. Availability of considerable number of suppliers as whom, most likely, it is necessary to consider doctors, instead of polyclinics, leads to possibility of switching with rather low costs. On the contrary, in case of hospitals suppliers are organizations rather, instead of certain doctors (though the situation of the Russian state clinics has and here the features), their number is insignificant, and geographical boundaries can be as local (in case of ambulance hospitals), and national (specialized clinics of planned hospitalization). Proceeding from these reasons, in hospitals it is possible to call structure of the market of services of treatment an oligopoly with the differentiated product. [3]

As for the major essential factors of environment - they are given in the table below.

Factors	Opportunities	Threats
Geopolitical provision.	International popularity and big authority of St. Petersburg. Border and seaside provision, proximity to Moscow and countries of European Union. Arrangement on crossing of water, railway, automobile, aviation and pipeline ways.	Remoteness from the most important business centers of Europe. Climatic and hydrogeological conditions, threat of floods. Small depths, shallows, freezing of east part of the Gulf of Finland, complicating navigation.
Population	Big population (availability of the capacious labor market and consumption). Rather high educational and cultural level. Low level of a social conflictness. Commitment of the majority of the population to democratic values. Lack of serious political conflicts.	Population aging, low life expectancy, low level of birth rate. Big property differentiation. High crime rate. Growth of number of cases of manifestation of national, racial and religious intolerance Lack of serious political conflicts.
Spatial organization and its administrative regulation.	Big territory and considerable extent shore. Availability of palace, park ensembles, monuments of history and culture of world value. Availability of territorial allowances for construction of housing, public and business and production objects.	High share of industrial building in the central regions of St. Petersburg. Disproportions in density of a housing estate, security with the public and business territories and objects in the certain districts of St. Petersburg. Incompleteness of process of registration of borders of the parcels of land on considerable part of the territory of St. Petersburg.
Political	Support by subjects of managing of municipality of pursued social and economic and financial policy in the sphere of health care reveals in support of pursued administration social and economic and financial policy in health care and other industries of the social sphere from subjects of a local economic system. It happens through adjustment of public relations to representatives of local economy and involvement of subjects of managing to participation in social life of municipality.	<p>Regional health care in Russia it is necessary to carry to other problems of management:</p> <ul style="list-style-type: none"> - rupture of an administrative chain of command the health care, turned out to be consequence of adoption of the legislation on local self-government; - insufficiency at regional governing body of health care of economic levers of impact on municipal authorities of management; - lack of the mechanism of a joint management of health care regional and municipal authorities of the power complicates implementation process of strategic tasks of development of health care; - lack of information and analytical system for implementation of monitoring of a state of health of the population and efficiency of functioning of a health care system of area; - lack of system of monitoring of satisfaction of patients in amount and quality of provided medical services; - lack of coordination in questions of the organization of medical attendance between the departments having own network of medical institutions and regional governing bodies of health care; - lack of effective mechanisms of quality control of the medical care rendered by the private medical organizations.

<p>Situation in St-P and infrastructure</p>	<p>Availability of residential recreational suburbs, richness of water resources. The developed system underground and various types of land public passenger transport.</p>	<p>Lack of capacities on utilization and conversion of waste. Congestion of a street road net and transport infrastructure. The slowest speed of construction of new medical institutions. Unsatisfactory condition of surrounding environment. Insufficient number of city hospitals, weak material resources of a health service.</p>
<p>Economics</p>	<p>Diversified structure of economy. Availability of sector of production high-technology, knowledge-intensive products. Availability of the competitive and high-growth organizations of transport. High level of development of financial and bank infrastructure, high credit rating. Availability of a modern distribution network and capacious consumer market. High level of competitiveness of a number of productions. High tourist potential. High level of culture of St. Petersburg, being an important economic and city-forming factor weak material resources of a health service.</p> <p>Besides.</p> <p>In this area it is possible to note process of formation of such institutes as business incubators:</p> <p>In Petersburg there are also a lot of Higher educational institutions which could become a basis for creation of science and technology parks and business incubators in the sphere of high technologies and innovations. And it is strange that still any HIGHER EDUCATION INSTITUTION didn't risk it to make. Especially, considering that fact that today it is authorized to HIGHER EDUCATION INSTITUTIONS to create small enterprises.</p> <p>In St. Petersburg a situation about business - incubators and science and technology parks other, than in Moscow. In the city two "these" business incubators function.</p> <p>The business incubator "Crystal" - a business incubator for subjects of small entrepreneurship, the project is implemented together with the Ministry of Economic Development of the Russian Federation. The total area of a business incubator is 3200 sq.m. Quantity of workplaces - 160.</p> <p>"Ingry's" business incubator is an object of innovative infrastructure of St. Petersburg, a unique platform for support of perspective high-technology projects and beginning entrepreneurs, the purpose which – to help startups to develop to a stage of receipt of financing and entry into the market. The total area of a business incubator of "Ingry" - 1838,77 sq.m. Quantity of workplaces - 209.</p> <p>By us it isn't found in these science and technology parks of the new entities in the sphere of medical services,</p>	<p>Considerable depreciation of the fixed business assets. Deficit of a qualified manpower of working and technical specialties. Insufficiently high level of the income of the population. Weak promotion of products of St. Petersburg, in the foreign market. Large number of potentially dangerous production objects.</p> <p>Besides.</p> <p>Development of each new medical technology only then will achieve the object when the innovative cycle will come to the end: fundamental development – product receipt – its production commercially – implementation (use) of a product in clinic for diagnostics, treatment and prevention of diseases. In Russia now implementation of new technologies in practical health care by time is tightened for years. And to it there is a number of the serious reasons:</p> <ul style="list-style-type: none"> - within an industry there is no accurate single regulating document about system of implementation of achievements of science in practice; - there is no mechanism of transfer of the new medical technologies developed by NIU Russian Academy of Medical Science and ready to use, the Ministry of Health and Social Development of the Russian Federation for implementation in practice of work of treatment-and-prophylactic organizations of the state health care system; - Russian Academies of Medical Science research establishments have no sufficient financing on implementation of patent study, patenting, registration, and also for preparation of scientific and technical documentation and clinical approbation of new medical technologies that extends terms of their finishing to readiness for implementation; - mechanisms of state-private partnership, as instrument of investment attraction in domestic science aren't fulfilled; - there is no professionally prepared personnel in spheres of marketing researches and commercialization of the knowledge-intensive products in the field of medicine; - work of organizations of practical health care on the standards approved by the Ministry of Health and Social Development of the Russian Federation, does almost impossible implementation of new technologies of diagnostics and treatment as their use, first, won't be paid by the compulsory health insurances territorial funds, secondly, the remark for departure from the standard will be made organization.

	in the conditions of market economy practically have no chances of effective development due to the lack of access to considerable financial resources. Medium business is the company with turnover (under the law) 400 million rubles. Therefore it is necessary to provide entry into structure of clusters of large business. He shall act and as the investor, an attracting subcontractor in the programs and as the customer on intellectual developments for small and average entrepreneurship, providing that network interaction with smaller companies.	
Social sphere	Rather high level of development of education systems and social protection of the population, culture and youth policy. Active development of non-state sector in the field of education and social servicing.	Insufficient financing and weak material resources of organizations of education systems, health care and cultures. Insufficient level of security of organizations of the social sphere qualified personnel. [4]

Also, effective provision of services of health care is connected with a situation on four related markets:

- 1) the market of services of the medical insurance as which subjects insurers (the population, the entities, authorities) and insurers (medical insurance companies) act;
- 2) the health care market where service providers are medical institutions, consumers of services — the population, and buyers of services — medical insurance companies;
- 3) labor market of medical workers;
- 4) capital market.[1]

Existing restrictions on related markets seriously slows down structural reform of an industry and makes essential impact on price level and rates.

First of all it belongs to the capital market. Medical institutions not only aren't joint-stock companies, but also can't be sold. As a result low effective organizations can't be purchased by more effective, and the unique tool of pressure upon them remains administrative. It, in turn, leads to that more effective medical institutions, and also insurance companies can extend only due to new construction that is much more expensive than restructuring of available organizations. Result is growth of rates and for services of successful private clinics (at the expense of inclusion in a rate of an investment component), and to the overestimated direct budgeted expenses and rates for benefit of public institutions (along with successful state clinics it is required to support low effective).[2] Potential investments into creation or expansion of private clinics face and a set of administrative barriers. As a result of restriction in the capital market lead to growth of rates and that is more important, to underinvestment in a health care system.

The labor market of medical workers has no essential restrictions regarding training, but thus is characterized by a phenomenon of permanent deficit of doctors and average medical personnel with their high number per ten thousand people of the population. It is obvious that this phenomenon is caused not by physical staff shortage, and the extremely low salaries and lack of system of remuneration for high-quality work.

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III. Factor analysis: opportunities and constraints for the particular trans-border cluster to grow

According to official figures (the Administration of St. Petersburg) in our city goes the fissile work on strengthening of material base of healthcare institutions. During the whole year implementation of the national "Health and well-being" project, as one of priorities of social policy actively proceeded. Padding medical examination of the population working in public institutions of education, health care, culture, in area research establishments is carried out. The considerable positive changes happened in the sphere of technical equipment of medical institutions - a large number of the modern medical equipment enters.

Thus, still a main objective of development of health care in the area is upgrading of a rendered medical care and prophylaxis of diseases.

"Regions which decided to be engaged in development of medical clusters, pass approximately an identical path. In a year - two the comprehension comes, in what direction it is necessary to develop. It is possible to rely on development of industrial production, in the most prime option – contract production. And it is possible to strive to get to more highly profitable niches bound to research activity, carrying out preclinical and clinical tests, creation of new pharmaceuticals, formation of good infrastructure for the small and medium-sized scientific and technological companies", – *the head of department of foreign economic activity and development of medico-pharmaceutical projects Alexander Berezhnoi* argues.

St. Petersburg here is more narrow some years as chose the second path. According to the *president "Novartis-Russia" Vadim Vlasov*, 3/5 investments in the Petersburg projects go on research and development. "Astrazeneka" became the first global pharmaceutical company which has opened characteristic R&D-powersheep in Russia.

According to M.Porter's theory, the reference characteristics of a cluster can be reduced to the following indexes:

- 1 . opportunities for research and development
- 2 . qualification of labor
- 3 . development of labor potential
- 4 . proximity of suppliers
- 5 . capital existence
- 6 . access to specialized services
- 7 . relations with suppliers of inventory
- 8 . intensity of formation of networks
- 9 . enterprise energy
- 10 . innovations and tutoring
- 11 . collective vision and management.

Preconditions for forming the cluster:

existence of the competitive enterprises
(rather high level of efficiency of the companies and the sectors entering into a cluster; high level of export of production and services; high economic rates of activity of the companies, such as profitability, price on the joint-stock, etc.);

existence in the region of competitive advantages to cluster development
(advantageous geographical position; access to raw materials; existence of specialized personnel resources, suppliers of accessories and the bound services, special educational institutions

and educational programs, specialized organizations conductive research and development, infrastructure; rather high level of foreign investments at the level of the enterprises or the sectors entering into a cluster, etc.);

- geographical concentration and proximity

(key participants of a cluster are in geographical proximity to each other and have opportunities for the fissile interaction);

- wide set of participants

(the cluster can consist of the companies making end-production and services, as a rule, exported out of limits of the region; systems of suppliers of accessories, equipment, specialized services; and also professional educational institutions, scientific research institute and other supporting organizations);

- existence of communications and interaction between participants of a cluster

(existence of working communications and coordination of efforts between participants of a cluster. These communications can have the various nature, including the formalized relationship between the head company and suppliers, between supplier, partnership with suppliers of inventory and specialize service; communications between the companies, Higher education institutions and scientific research institute within cooperation at realization of collateral research and development and educational programs).

On a territorial sign it is possible to note the positive moment, certainly. The most competitive multinational corporations usually tend to concentrate in one region – it is explained by that one or several firms, reaching competitiveness in the world market, extends the positive influence on the immediate environment: suppliers, consumers, competitors. And successes of an environment, in turn, make positive impact on further body height of competitiveness.

Predicted advantages of creation of a cluster:

- the new producers coming from other branches, accelerate the development, stimulating scientific researching works and providing necessary tools for introduction of new strategy;
- there is the free exchange of information and fast distribution of innovations on channels of suppliers or the consumers having contacts with numerous competitors;
- interrelations in a cluster, often absolutely suddenly, conduct to emergence of new paths in the competition and generate brand new opportunities;
- human resources and ideas form new combinations.[1]

Among the **factors motivating integration** of various forms and the organizations **in a branch (regional) cluster**, it is possible to note the following:

- o decrease in expenses for introduction of new technologies at the expense of a scale effect;
- o more efficient character of collective innovations in the knowledge-intensive branches at vertical integration and horizontal cooperation at an outsoaring;
- o increase of possibility of the enterprises to engaging of investments and grants;
- o more efficient system of an exit to foreign partners and new markets.

Experience of clusters development in Finland

All the Finland is divided into 5 medical districts. So, the largest region — capital, follows further Pirkanmaa (with the central city of Tampere), Turku, Kuopio and Oulu. In these regions there are 5 university clinics, in everyone on one, in fact, it is medical clusters in which are located: medical universities, the research centers and laboratories, highly specialized hospital and hospitals where, actually, treat patients, and accompanying infrastructure as, for example, hotel for patients. That is all medical institutions which are engaged as development and innovations and their introduction, and treatment of people and tutoring of future doctors, are located in one place.

The health system in Finland cardinally differs from Russian, though the Finnish doctors find also similarities. Finns recognize a high level of Russian and in particular the St-Petersburg colleagues. However the process of innovations introduction in Russia moves sluggishly.

The government and municipalities of Finland spend about a quarter of the budget for health care: so, for example, in 2011 from the state budget 23% of collected taxes were allocated. However the government does not interfere in the scheme of rendering medical aid to the population, everything is solved by local authorities which cooperate with medical districts. Quality of medical care directly depends on the size of treasury of municipality, and locals can call easily to account the authorities of regions.

Let's note, in Finland concepts basic and specialized medical aid which could be characterized as visit of the therapist and the narrowly targeted expert, for example the ophthalmologist are legibly differentiated. Today Finns have the right to receive only the basic help in other regions and EU countries, and highly specialized — is free, only in the direction of the doctor in the region and if that is absent — that in other. However by 2014 the situation has to change — Finns will be able to address to doctors and in neighboring countries.

All in all, in Finland people are provided with all types of treatment, except transplantation. Such medical services can be received only in the capital region.

The population of Finland grows old, and the thicket needs providing the basic help, instead of highly specialized, emphasized *the director of medicine district Tampere with Pirkanmaa Ikhlaynen*. By the way, at forums on the Internet people complain that for record to the therapist month is necessary, and to visit it — and all three months.

In 2011 about 10% of the rendered services were provided to inhabitants by private clinics, - *Marko Rot, the director of development of Finn Medi Oy company* explained. The main spheres in which private clinics work, is an odontology and an ophthalmology (as in Russia), the physiotherapy, - *Matti Eskolaynen, the general director of Finn Medi Oy* shares. And here unlike Russia at Finns in the sphere of an oncology, same expensive, it is authorized to private firms to work.

In Finland there is a fight for experts. In private clinics of the doctor receive several times more though in municipal authorities of opportunity for career of the expert and scientific activity is much wider.

Problems with doctors are observed in rural areas: there doctors entice, as in Russia: housing, sometimes salaries, with each doctor sign the individual contract.

Following the results of 2010, according to *the research* which has been carried out by *World Economic Forum*, Finland once again took the 1st place in a rating of perspective competitiveness of "Growth Competitiveness Index" (an assessment on 12 indexes, such as: quality of institutes, infrastructure, macroeconomic stability, health and primary education, the higher education and vocational training, effectiveness of a commodity market and services, effectiveness of a labor market, development of the financial market, technological level, size of domestic market, competitiveness of the companies and innovative potential). And also, the first place (for 2012 a predicted place – the third) in a rating of the current competitiveness of the countries - Business Competitiveness Index, having overtaken such leading industrial powers, as the USA, Japan, Great Britain. As Russia in this rating takes only the 67th place (research was conducted among 144 countries),[4] the analysis of successful experience of our northern neighbor can be useful to forming of characteristic priorities of economic policy and corporate strategy.

Experience of clusters development in Finland has special value for economy of the North West of Russia. In our region evolutionarily there were preconditions for formation of similar clusters which in the scales and potential are capable to surpass the Finnish significantly. It is possible to speak surely about existence of potential clusters on the basis of such branches, as the forest industry (uniting forestry, a mechanical and chemical woodworking), metallurgy and metal working (black and color), fuel and energy sector, the food industry, sector of informational technologies and telecommunications.[3]

Besides, clustering potential, that is steady functioning in system of the bound branches, possess both the pharmaceutical and medical industry (a health care cluster on the Finnish classification), the perfumery and cosmetic, chemical industry.

Also creation of the Russian-Finnish clusters in the health care sphere from the point of view of the *Finnish researchers - specialists of Institute of research of economy of Finland (ETLA)* who claim is confirmed that this cluster possesses apparent competitiveness. As indicators of the international competitiveness of end products of branch in the course of research served: excess of a share of production of this branch in the world market over a cooperative share of the country in common world trade; excess of branch export over import. While potential competitiveness was fixed in case growth rates of sales volumes, profit and investments, and also the labor productivity level in this branch is higher industry average in the world.

Environmental friendliness of finished goods and used technologies remains the essential moment of global strategy on which the companies will surely stake. For a health care cluster the research potential, the continuous innovations, orientation to consumers of the concrete regional markets, and also growing internal and external demand become the most important elements of future competitiveness.

7. The characteristic features of Finland clusters

Investigating becoming history, and also the most important tendencies of development of the Finnish clusters, it is possible to reveal some characteristic features. In all cases the most important factor of the modern competitiveness of clusters is the high level of development of the bound institutes and branches system. On the one hand, it grew out of the market relations and the efficient competition, and in that, as for formation of national innovative system and inflow of qualified personnel, - a marginal merit of a state policy. It is possible to note interesting paradox: efficient development of production with high added value and the active innovations happened to in the sectors lacking natural resources. The lack of characteristic energy resources created demand for power efficient technologies, the relative lack of forest resources (for export-oriented production), metals, chemicals stimulated deepening of processes of raw materials treatment, enterprise calculation and competent production policy provided the right choice of perspective market niches and investment priorities.

It is possible to expect that in the near future the main role in ensuring steady competitiveness for the majority of clusters will be played by a factor of quality of corporate strategy. In particular, key aspect of strategic development of such clusters as informational and telecommunication, forest, power and machine-building, globalization of operations, orientation to consumers of the concrete regional markets, increase in a service component of production, export of engineering services at leadership preservation in new technologies will be.

Environmental friendliness of finished goods and used technologies remains the essential moment of global strategy on which the companies of forest, machine-building and power clusters will surely stake. For a metallurgical cluster increase of flexibility of production, body height at the expense of investments, merges and absorption, and also corporate alliances become the main direction of corporate strategy, most likely. For clusters in health-care and well-being sphere and business services one the most important element of future competitiveness is persistent innovations, and also growing internal and external demand.

Concerning Russia

Among **major factors and the conditions promoting formation of clusters** and defining possibility of their emergence in the Russian conditions, it is necessary to allocate existence in the region:

- large and, it is desirable, commercially successful knowledge-intensive companies, capable to finance new projects and to act as the clustering center for more small-scale productions;
- The scientific research institute having accumulated knowledge and potential of research and development in the particular sphere, competitive at world level, and also, it is desirable, experience of commercialization of technologies;
- the small and medium-sized hi-tech companies acting as suppliers for leading companies of a

cluster, and also carrying out characteristic initiative development;

- the large technical university which is carrying out preparation of qualified experts in specialties demanded by the cluster, and also conducting initiative scientific development;
- the technological parks providing access to the modern research infrastructure and by that of efforts promoting concentration, decrease in expenses and to more efficient dissemination of knowledge;
- public support groups (Chambers of Commerce and Industry, branch associations and alliances, the specialized commissions and councils at city or regional administration, etc.), promoting formation of the adequate informational environment that allows to reach more deep interaction.

For the modern Russia relevance of the concept of clusters is undoubted, as:

- the considerable proportion of the production potential created in the former USSR initially was not focused on the market;
- the export and raw orientation which has developed now of national economy is not equitable to radical interests of Russia;
- precipitantly the technological capacity of the country collapses;
- effectiveness of the Russian industry is low; technological lag from the developed countries does not allow to create competitive knowledge-intensive production.

Forming of medical innovations clusters in the Russian health care has to develop taking into account three principles:

1. Not to destroy the system which has developed in the country of scientific searching and development of new technologies.
2. To provide close interaction of health care and medical science.
3. To provide optimum conditions of creation of medical clusters taking into account the directions of their activity.

Restrictions:

Health care are characterized by irregular development of cluster structure and weakness of separate elements of the “Diamond” model therefore admits at present only potential branch. However thus there are expressed competitive advantages and the fundamental factors promoting further development.

The cluster of health care focused generally on an upkeep of domestic market, is important from the point of view of employment, but in the next 10-15 years it is expected that body height of sector will be more slowly than economy body height as a whole.

The competition in the sphere of health care is developed considerably strongly. Despite the impressive successes caused by introduction of innovations, ameliorating medical care, its results in of a decreasing of expenses more than modest. However the attentive analysis of a situation shows that it is bound at all to the shortcomings inherent in the competition, and to the system of the incentives which has entered into a contradiction with fundamental laws of competitive fight. The prices remain high even when there is an overabundant offer. Technologies remain expensive even then when they are widely used. Hospitals and attending physicians do not test a lack of patients even when request from patients higher prices, not rising thus qualities of an upkeep (and in many cases — even reducing it). Until recently operating system of inducing encouraging introduction of innovations which increased expenses or increased quality, despite of cost.

At realization of cluster policy in Russia it is necessary to carry to restricting factors:

- poor development of small business, rather undeveloped infrastructure and organizational conditions;

- weak level of trust between the main subjects of the economic activity, reaching the minimum in relationship of business and the power;
- consideration of factor conditions (generally access to cheap resources) as the main determinant of success of development of clusters;
- absence of culture of informational openness that causes mistrust of potential participants of a cluster and formation of unfair competition;
- low culture of production, lack of experience of management on the basis of outsourcing;
- poor quality of business climate;
- low level of development of associative structures (chambers of commerce, production associations) which do not cope with a problem of development and advance of priorities and interests of regional business;
- the near-term horizon of scheduling — actual advantages from development of a cluster appear only in 5-7 years.

As primal problems of cluster strategy in the health care sphere for Russia it is necessary to define:

- ✓ Integration of efforts of authorities and business community, the scientific and educational medical organizations, practical health care, having concentrated the main attention on development of the most demanded technologies and giving them to the consumer.
- ✓ Creation of new methods of diagnostics and the treatment, based on biotechnologies and nanotechnologies.
- ✓ Development of enterprise intelligence in the sphere of distribution of medical innovations.
- ✓ The commercialization of innovative activity considering not only existence of the available market for distribution of innovative technologies, but also it is active its forming.
- ✓ Increase of competitiveness of domestic innovative medical production in the internal and external markets.
- ✓ Formation of a new control system by innovative medical activity.
- ✓ Increase of technological level of domestic system of rendering a medical care.
- ✓ Integration of domestic and foreign innovative medical development into activity of the leading regional medical centers.
- ✓ Creation of new model of the personnel work providing not only training for introduction and use of medical technologies, but also continuous increase of their qualification in the continuous mode.
- ✓ Engaging of domestic and foreign investors for development and introduction of high performance technologies.
- ✓ Ensuring participation of the Russian organizations in the most perspective foreign research and technological projects.
- ✓ Formation of corporate exemplars of distribution of experiment on introduction of concrete medical innovations for its broad replication.
- ✓ Consolidation of efforts with the leading domestic and foreign research centers for advance of the most efficient medical technologies.
- ✓ Development of the informational and communicative environment for optimum advance of innovations.

WHAT FINNS WANT TO LEARN FROM THE RUSSIAN EXPERTS?

With that often development of the Russian scientists does not take root and are not put into practice, we faced and 20 - 30 years ago. But now Finns seek to overcome estrangement of the scientists believing that they will lose the independence because of intervention of experts in advance of their ideas, - *Marko Rot, "Finn Medi" vice-general director* told. In particular interest to experts from the St. Petersburg state chemical and pharmaceutical academy it is already offered to them to conduct researches in the field of medicine and production pharmaceuticals is shown.

Intermediary services, as a rule, in Russia associate with corruption, and the Russian doctors almost constantly complain of a lack of financing, business simply does not reach development of high technologies. Finns look for new technologies, are ready to attract advanced innovations, and also want to help with returning of the Russian doctors working abroad to home. In Finland medical institutions in the sphere of health care work only under the contract, and their activity can be checked easily while openness of the Russian business and researches is still very far from the optimum.

The Finnish experts also want to learn at the Russian experts to skills of work in crisis situations. "When in Turkey there was an earthquake, 2 hours per the country later the Russian and Israeli rescuers and doctors" landed, - faithfully *the director of Finnish clinics Roth* noted.

Is at us and technology of treatment of cancer diseases which are not present in Finland therefore negotiations with the Ministry of Emergency Situations oncological center are carried on for the relative tutoring (it is a question of the All-Russian center of emergency and radiation medicine of A.M.Nikiforova, MCHS Rossii, FGUZ, located partially in the Army medical college territory of Kirov, (No. 2 Ministry of Emergency Situations)) - marked out Marko Rot.

But not only scientific development is interesting to the parties, Finland intends to develop medical tourism and to attract Russians, in particular Petersburgers, on treatment. However it is supposed that tourism will be bilateral, and Finns will be treated too in Russia as, according to the Finnish doctors, some types of treatment are cheaper in Finland, some — in Russia. Now, according to research, for receiving medical services of Russians attract 4 countries: Germany, Israel, Turkey and France.

In the concept of long-term social and economic development of the Russian Federation for the period till 2020, it is emphasized that innovative approach is necessary for an exit of Russia to level of one of leaders of world economy to health system development as the primary branch, urged to provide national economy with the main resource – the human capital, first of all. It is provided to increase for 2008-2020 a share of the public expenditures by health care in gross domestic product from 3,6% to not less than 5,2-5,5% (taking into account distinctions in parity of purchasing power of ruble and currencies of other countries the share of the public expenditures on health care in gross domestic product will make about 10-11% that is comparable to indexes of the advanced foreign states).

In the countries where the state component of health system is great, more high level of trust to national medicine is noted from the population. Such conclusion is made by organizers of collateral Internet research – the *Ipsos Company* and the *Reuters agency* which has interrogated inhabitants of 22 countries of the world.

According to the *Center of market researches "Pharmexpert"* St. Petersburg is the most investment attractive Russian region and a launch pad for successful implementation of projects in the sphere of pharmaceuticals and the medical industry.

All this creates great opportunities for development of the Russian-Finnish cooperation assuming not only an exchange of resources, technologies and a know-how, but also creation of more or less steady subcontract schemes up to formation of cross-border clusters. The favorable investment and business climate (including without fail development of the competition and common information space creation) will promote deepening of regional and technological specialization and realization of the original business models, capable to lead to the relative strengthening of competitiveness and to become an important step to providing a sustainable development of the economy of countries.

It should be noted that a cluster it is inexpedient to create a directive path. It is created by the market and the competition. The state cannot force the enterprises to enter into a cluster, and can create only conditions for its successful functioning — infrastructure, to stimulate development of a cluster by the favorable tax policy, investments.

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IV. Cluster analysis (supply chains, access to resources, demand and supply)

Access to resources

The creation of pharmaceutical cluster in North-West region is possible due to vast access to resources in this area. It is necessary to look at this situation from different points of view.

1) the main city of North-West region has a great range of the leading medical universities in terms of one city. The greatest is Saint-Petersburg State Medical University named after I.P.Pavlov (1897). The departments of the Institute have gradually become scientist centers and have launched the most progressive methods of particular disease treatment and diagnostic to medical practice at that time. High quality of medical specialist training is provided by more than 1000 teachers and scientists forming the staff of the University. There are more than 600 doctors and PhD holders, 25 current members of Russian Academy of Medical Science and honoured academic figures among them. Research is made in 12 main directions with the aim to solve actual problems of public health and medical science, with the use of the most modern medical technologies.

Also there are Saint-Petersburg State Medical Academy named after I.I.Mechnikov (1907), Saint-Petersburg State Chemical Pharmaceutical Academy (1919), Saint-Petersburg Military Medical Academy and some other.

2) There are more than 10 research institutions in medical sphere, like: Molecular diagnostic centre, Research Institute for neurology, Research Institute for gynecology, medical radiologic research centre and many others. The above mentioned institutions can play a crucial role in cluster creating. There are young specialists just finished the university that can apply their knowledge in the same region and therefore to increase innovative image of the country.

3) One more vital part of cluster creation is that Russia has its own manufacturers of medical equipment and pharmaceutical manufacturers. There are about 1500 manufacturers of medical equipment. Domestic manufacturers are offering wide range of products that can compete with foreign counterparts. The list includes equipment for X-rays, electrocardiograms, operational equipment, sterilizers, anesthesia and respiratory devices, equipment for functional diagnostics.

At the moment the real potential of drug consumption, produced by the national industry is not more than 10-15% market value. One Russian company "PHARMSTANDARD" is the only domestic producer of the top-20 players in the pharmaceutical market of Russia. But it is believed that the situation is going to change due to pharmaceutical cluster formation in Leningradskaya oblast. The development of pharmaceutical cluster is one of the priorities of the Government of St. Petersburg. The effectiveness of the pursued government policies is revealed in the increased interest of international businesses in St. Petersburg as well as the results achieved. 11 projects on the localization of pharmaceutical facilities and creation of modern research infrastructure are being implemented in the framework of the cluster. The total volume of investments constitutes approximately 30 million rubles. The projects are implemented with the participation of the leading research and education centers, which play a pivotal role in establishment of joint modern research centers and labs. [<http://www.doingbusiness.ru/pharmaceuticals-medical-equipment/clusters-business-sectors/pharmaceuticals-and-medical-equipment-cluster/item>]

4) It is necessary to speak about state support for cluster creation that is, above all, to create the necessary conditions for the possibility of producing innovative products in the field of pharmaceuticals, medical equipment and medical supplies. This means providing the prepared areas of engineering and transport infrastructure to accommodate new industries, tax benefits, the introduction of a special customs regime, assistance in the promotion of products. The coordination of the executive authorities of St. Petersburg for the implementation of the industrial policy of St. Petersburg in the cluster of pharmaceutical and medical industries, as well as cluster development programs conducted by the Committee for Economic Development, Industrial Policy and Trade of St. Petersburg

4.2 Demand and supply

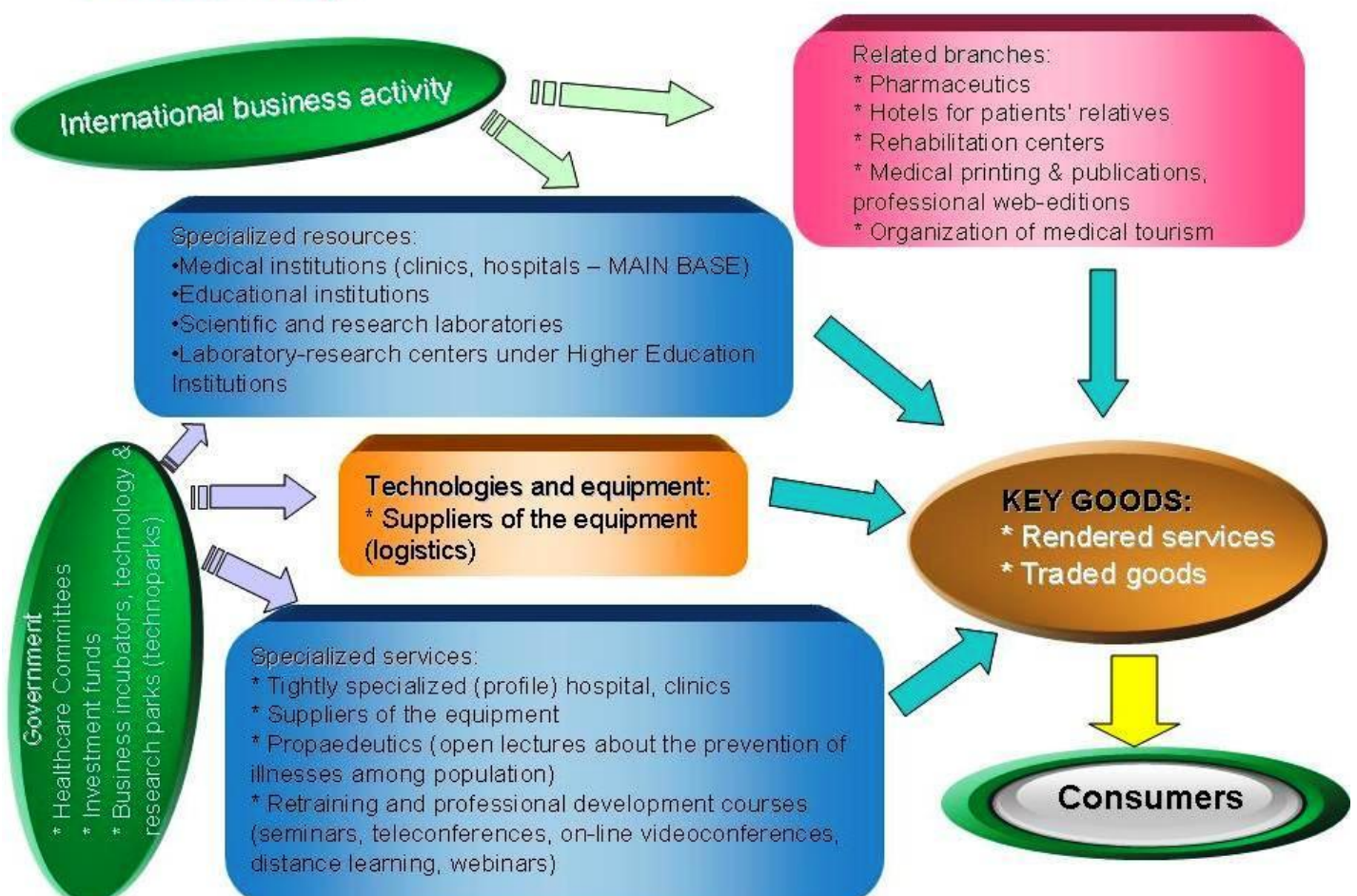
Demand for medical cluster creation in this region is very high. The issue of health care in recent years has repeatedly been named one of the priorities by the head of state and head of government. The main accent is made in the frame of purchasing new foreign equipment, but the problem won't be solved. Usually, there is the equipment, but there is no qualified personnel to work on it. Our domestic medical equipment should be produced and our specialist must know how to use it.

A medical cluster can solve some vital problems: reduce the tension in the sector, to create new jobs, to share experience and interchange specialists. All this positions are proved by the state Program "Development of pharmaceutical and medical industries" for 2013 - 2020 years.

As a result of economic growth of Russian Federation, internal manufacturers appeared, capable not only to produce competitive products, but also take part in scientific application of them. To change this situation the need to adjust new directions and goals of public policy arose. Therefore, cluster creation contributes to the competitiveness of the industry through the effective interaction between members of the cluster associated with their geographically close proximity, access to scientific knowledge, education and industrial innovation, technology and know-how, specialized services and highly skilled personnel, lower transaction costs, as well as to the implementation of joint cooperation projects.

V Cluster map

Cluster map



Predicted interacting structures:

From the russian side:

- ready to sponsor in RF: state corporations "ROSNANO", "RosTechnologies"
- Russian pharmaceutical companies: "Farm-Standart", "Geofram" - 3; "Samson-Med" and "Farmasintez"; "Neon", "Verteks" and "Polisan"; "Biokad", "Farm-holding" and "Imuno-Gem"
- HIGHER EDUCATION INSTITUTIONS: St. Petersburg state chemical and pharmaceutical academy, St. Petersburg state medical university of a named after academician I.P. Pavlov, etc.
- The development center Skolkovo (it is concentrated on 4 main directions: biomedicine, biopharmaceutics, bio-energetics and bioinformatics)

From the finish side:

- Investors: Finnish Health Technology Association, FiHTA
- Private clinic «Finn Medi Oy», which has subsidiaries in all the 5 districts of Finland
- Pharmaceutical companies: «Pfizer», «Novartis», «Orion Pharma», «AstraZeneca», «GlaxoSmithKline», «MSD», «Sanofi-Aventis», «Roche», «Leiras», «Bayer».
- Laboratory researches at the medical centers: PerkinElmer Wallac, Thermo Fisher, Orion Diagnostica.
- The perspective companies on production of laboratory equipment: Medix, Abacus Diagnostica, ArcDia, MobiDiag, Ani Biotech.

VI. Cluster diamond model (Michael Porter)

Porter considers that steady production body height hardly ever was based on the above-mentioned basic inherited factors. The abundance of such factors can undermine competitive advantage, actually. He offers the concept of "Clusters" or groups as a part of the interdependent firms, the suppliers, allied industries and the organizations which arise in particular places.

These clusters are geographical concentrations of the interdependent companies, specialized suppliers, service providers and the associated organizations in particular area. They grow where enough resources and competences which reach a critical threshold concentrate and get a key role in some economic sphere with decisive steady competitive advantage over other places, or even the global superiority in the field.

Michel Porter claims that clusters can affect on the competition by 3 ways:

1. They can increase efficiency of the companies in a cluster.
2. They can stimulate innovations.
3. They can stimulate the directions new business to development.[1]

According to Porter, as a rule, competitive advantage of the countries grows out of the interdependent expanded factors (advanced factors) and interactions between the companies in these clusters. The government can have the Fissile impact on these factors.

Interdependent expanded factors of Competitive advantage:

Strategy, Structure and Competition of firms (The Strategy, Structure and Rivalry of Firms). In the world dynamic conditions prevail. The direct competition induces firms to increase efficiency and to stimulate innovations.

Conditions of demand (Demand Conditions). If clients are very exacting, constant pressure is put upon firms to improve the competitiveness through innovative products, high quality of rendered services, etc.

Allied supporting industries (Related Supporting Industries). The space proximity of initial or descending branches facilitates exchange of information and promotes the continuous exchange of ideas and innovations.

Factor conditions (Factor Conditions). Counter to an established opinion, Porter claims that

"key" factors of production (or specialized factors) are created, instead of inherited.

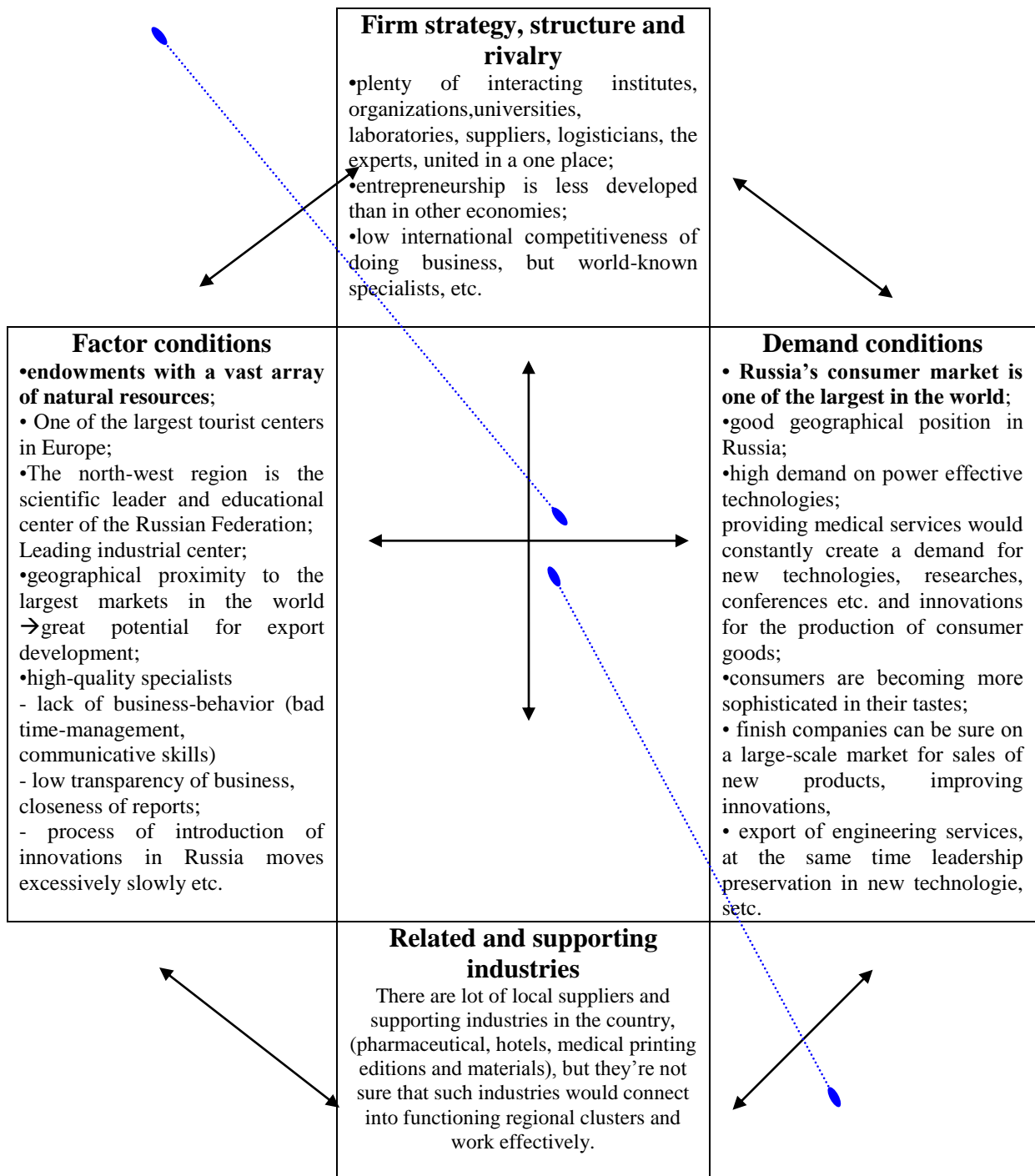
Specialized factors of production are the qualified manpower, the capital and infrastructure.

"Non-key" factors or public factors, such as an unskilled manpower and raw materials, can be acquired by any company and, therefore, do not create steady competitive advantage. However, specialized factors assume the considerable, steady investments. It is difficult to duplicate them. It also creates competitive advantage because if other firms cannot easily copy these factors, they are valuable. Government role in Model of a rhombus of Malt liquor.

Government in Model of a rhombus of Malt liquor carries out a catalyst role: it has to encourage, or even to induce the companies increasing the intentions and level of competitive effectiveness. It has to stimulate the companies to increase of the effectiveness, promote demand creation at an early stage on products with a high value added,[2] concentrate on creation of specialized factors and development of the local competition by restriction of direct cooperation and strengthening of antimonopoly regulation.

International business activity

- exchange of knowledge, experts, technologies;
- training of openness and transparency of business;
- takeover of the process of high-speed providing the innovations; etc.



Government

- investments Into research and development;
- integration of efforts of authorities and business community, scientific and educational medical organizations;
- commercialization of innovative activity;
- increasing of competitiveness of domestic innovative medical production on the internal and external markets;

- integration of domestic and foreign innovative medical development into activity of the leading regional medical centers; etc.

We suggest to consider cluster structurization at the following four directions:

a) object structure (elements as independent subjects – participants of a cluster: enterprises, organizations, etc.);

b) process structure which elements are the repeating business processes proceeding in different subjects of a cluster and at interaction between them (for example, process of serial or parallel-serial processing of the semi-finished products, carried out at the different enterprises of a cluster);

c) project structure which elements are projects – the non-reproducible sequences of actions having the specific achievable and checked goal;

d) environmental structure which elements are Wednesdays the main role among which for industrial clusters play professional communities (engineering, administrative, marketing, logistic associations, communities of consumers, etc.), and also sets of the formal and informal institutes functioning in a cluster.

The interdepartmental commission on scientific and innovative policy approved "Strategy of an advancement of science and innovations in the Russian Federation for the period till 2015" and the plan of measures on its realization, providing formation innovative the focused clusters, that is join of the enterprises – suppliers of inventory, accessories, specialized production and services, the research and educational institutions connected by the relations of territorial proximity and the functional dependence in the sphere of production and realization of an innovative product (goods, services). The cluster allows to concentrate on experts in one direction for the solution of specific objectives.

The essential element providing effectiveness of a cluster, participation in its activity not only federal, municipal, but also the most different business structures with use of the mechanism of state-private partnership which is one of key instruments of formation of clusters is. Cluster approach allows to increase significantly effectiveness of interaction in innovative process of the enterprises of the private sector of economy and the state research establishments, creates padding motivation to domestic and foreign investors for the organization of competitive technological production in territories with high concentration of scientific and technical and innovative potential.

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Cluster project

ENERGY CLUSTER FINLAND-RUSSIA, PART FINLAND

Cluster project

Introduction

In this report we would like to introduce the project of energy cluster in Finland. We present the Finnish part of cluster according to the country diamond model by M. Porter. It was very interesting to work under this project and knew a lot of information from many Finnish and Russian sources. As an example we have taken the real companies Fortum, Gazprom and Lukoil.

The report was written with the use of reseaching tools such as:

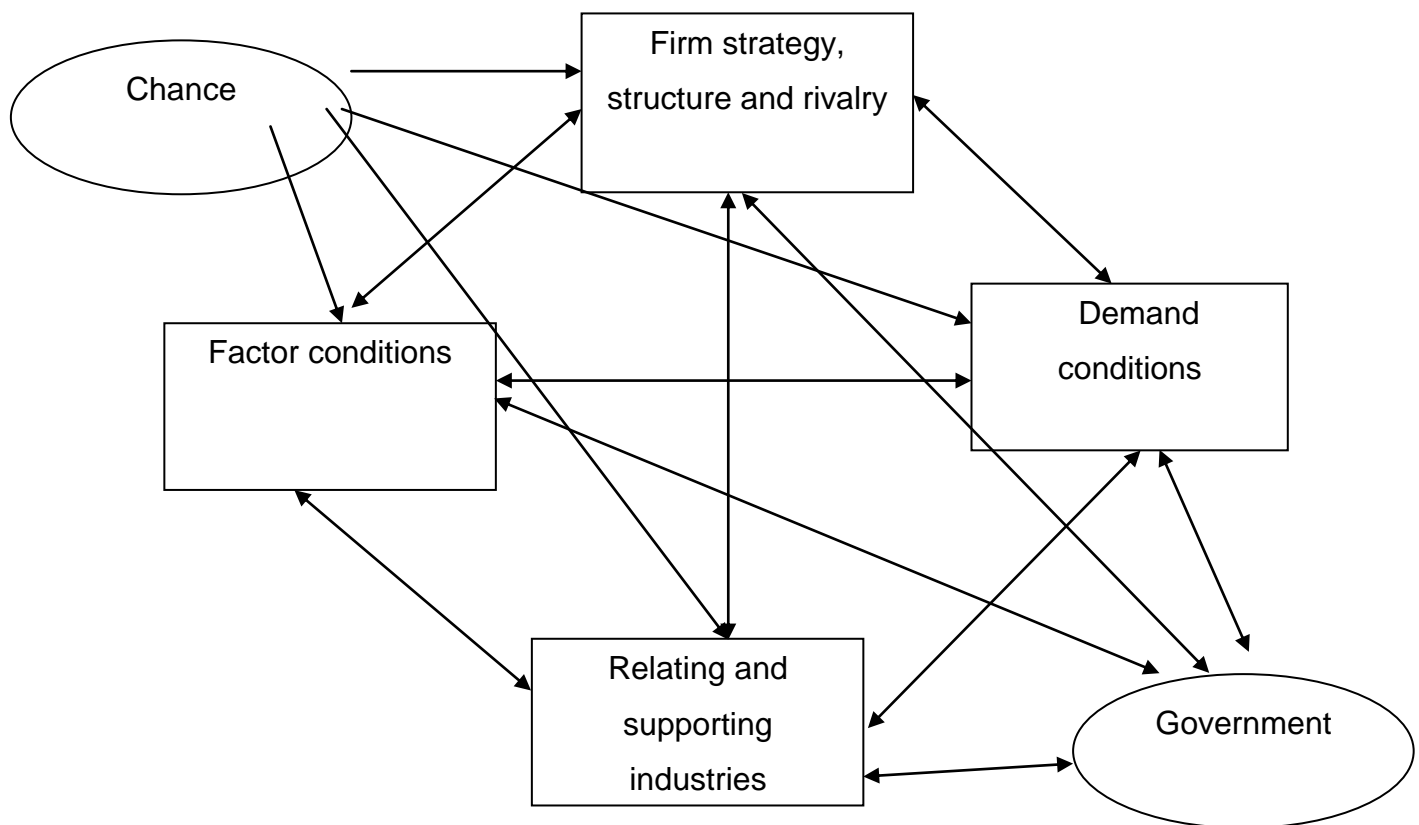
1. National Competitiveness (country diamond model by M. Porter) in general
2. Pestl analysis
3. Factor analysis: opportunities and constraints for the particular trans-border cluster to grow
4. Cluster analysis
5. Gazprom – Fortum – Lukoil cluster map
6. Cluster diamond model

References were used in various tasks. All references are web pages from Finland and from Russia. Statistics of Finland and other government pages are used in this project. Also some individual corporate web pages were used for example Gasum's and Neste Oil's pages.

We try to show the current situation in energy cluster in Finland, it's opportunities for development and strong cooperation with Russia.

1 National competitiveness (country diamond model by M. Porter)

Finland is one of the most innovative countries in Europe, ranking 2nd, behind only Switzerland, on the related pillar. Improving the country's capacity to adopt the latest technologies (ranked 25th) could lead to important synergies that in turn could corroborate the country's position as one of the world's most innovative economies. Finland's macroeconomic environment weakens slightly on the back of rising inflation (above 3 percent), but fares comparatively well when contrasted with other euro-area economies. (World Economic Forum, 2012-2013)



The “diamond model” is an economical model developed by Michael Porter in his book “The Competitive Advantage of Nations”, where he published his theory of why particular industries become competitive in particular locations. In his model Porter distinguishes four internal and two external sources of competitiveness (M.Porter, 1990)

1.1 Factor conditions

Finland is an advanced industrial economy with a thriving private sector and a business environment that is highly conducive to FDI. The government is business-friendly, and the country has a developed infrastructure, a skilled workforce and competitive operating costs. Red tape is minimal and Finland is one of the least corrupt countries in the world according to Transparency International. Foreign-owned companies can benefit from government investment incentives and access to the latest research from the extensive cooperation between Finnish universities and the private sector. Foreign investment in Finland is welcomed as a boost to the dynamism of the economy. As one of the most competitive and open economies in the world, Finland has a great deal to offer foreign investors. (Invest in Finland, 2010)

Total population of Finland by the 2011 is 5401 million people. (Statistic Finland, 2011)

The member companies of Finnish Energy Industries (ET) have approx. 15,000 employees, about 12,000 of whom participate in ET's labor market activities. The remaining 3,000 are mainly employed by municipal energy utilities. (Finnish Energy Industries, 2012)

Gasum for example a respected and attractive employee. The Gasum group has an average of 245 employees in 2011. (Gasum Annual report 2011)

Fortum has an average 10780 employees in 2011 (Fortum,2012)

1.2 Demand conditions

In the overall use of renewable energy, Finland is one of the leaders in Europe: renewable consumption as a share of gross final energy consumption is 28,5%, when the EU-average is 8,5%. Still, Finland is committed to further increasing the share of renewables, up to 38% by 2020. To reach the target, the share of renewable

consumption must be increased by 30 TWh within a decade, which entails increasing the usage of biomass for energy by 19 TWh, wind energy by 6 TWh and heat pumps by 6 TWh. (Finnish Energy Industries, 2012)

Electricity network operations in Finland are run as a monopoly and require a grid permit from the Energy Market Authority. Fingrid Oyj is the national grid operator in Finland. The Energy Market Authority controlling the Finnish electricity market has imposed system operator responsibility on Fingrid. Fingrid's task is to maintain national power balance management and to ensure that the Finnish electricity system is maintained and used in a technically appropriate manner. Fingrid is also responsible, together with the other Nordic grid operators, for safeguarding the necessary reserves for the operation of the electricity system. Around one hundred regional distributors are engaged in electricity transmission in the distribution networks. Since early 2007, the largest companies have had to divide their network operations and electricity sales into separate companies. (Ministry of employment and the economy, 2012)

1.3 Related and supporting industries

In order to maintain their good condition and reliable operations, the electricity networks, substations and control systems, i.e. the energy infrastructure, require constant maintenance. Traditionally, each electricity company has owned and maintained its own electricity network. These days, the service, maintenance, planning and construction of equipment are increasingly purchased from outside service providers. In other words, the ownership, operation, construction and maintenance of the network are being separated from one another. The Finnish Energy Industries (ET) is also the member association and sector organization for companies carrying on the design, operation, maintenance, construction of networks and power plants, as well as other services in the sector. Service provision is the fastest-growing industry in the ET sector. The efficiency of the energy sector is increased by developing and promoting the operations of the service provision market and the preconditions for existing and new service business operations in a

changing operating environment. Service production companies provide many kinds of services, sometimes in extensive areas. The services can comprise, for example, network contracting, installations, information systems, equipment manufacture, automation, industrial installations, control room services, energy metering, training, and invoicing services. The members of the Finnish Energy Industries currently include almost 30 service provision companies. In the next few years, the expansion of the industry is expected to continue. (Finnish energy industry, 2012)

1.4 Firm strategy, structure and rivalry

In Finland there are the organizations with the main aim to create an internationally attractive and competitive business environment for companies operating in Finland. For example Confederation of Finnish Industries (EK) is the leading business organization in Finland.

Mission: EK creates the world's best business environment for companies. (Confederation of Finnish Industries, 2012)

In this report we take as the example the Gasum company so Gasum's strategic goals are as follows:

- The market environment is favorable to natural energy gases.
- Natural energy gases contribute significantly towards the achievement of the national emission targets.
- Demand for natural gas and a considerable increase in biogas consumption is ensured.
- There is a considerable increase in energy services and in land and maritime transport services. (Gasum, 2011)

If we tell about the Fortum company so Fortum's strategy aims for continuous development of existing businesses and for market-driven growth in hydro, nuclear and combined heat and power (CHP) production. In addition to Fortum's technical competencies, the company's expertise and proven track-record in operating in competitive energy markets has a central role when pursuing growth opportunities in

existing markets and in the rapidly growing and liberalizing markets of Europe and Asia.

1.5 Government

Power generation in Finland is decentralized across more than 400 power stations, which use several different production technologies and raw materials. This diversified approach ensures a very stable energy supply and has kept the price of electricity, natural gas, wood and peat at a competitive level.

The ministerial working group on energy and climate policy has begun to update the strategy devised in 2008. The primary objective of the updating process is to ensure that Finland will be able to meet the energy and climate policy targets set for 2020. As specified in the Government programme, the new strategy will entail a programme to reduce oil dependence. (Ministry of employment and the economy, 2012)

Finnish energy policy rests on three fundamentals: energy, economy and the environment. The EU's role in steering energy policy has increased in recent years. The core framework of Europe's Energy and Climate Policy is based on decisions taken in December 2008. These include reducing greenhouse gas emissions by 20%, raising the share of renewable energy to an average of one fifth of total consumption (38% for Finland), while improving energy efficiency by 20% by 2020. Finland participates in activities related to oil distribution and the security of supply systems as required by the International Energy Agency IEA, and is bound, through numerous international organizations such as the NEA, IAEA and Euratom, to broad-based cooperation in the fields of nuclear energy and nuclear surveillance.

- **Chance** is an unexpected event, or an opportunity that cannot be predicted.

The Porter thesis is that these factors interact with each other to create conditions where innovation and improved competitiveness occurs.

2 Pestle analyze

2.1 Political factors

The Finnish government supports the production of renewable energy with tariffs, production support and with financial support for investments. Target in Finland is to get 38% of the national energy consumption from renewable energy sources before the year 2020. This is one goal of European Union's energy and climate agreement. Because of this goal, the government supports companies who are producing or starting to produce greener energy in Finland. Obviously these kind of financial supports are decreasing if the recession will continue for a longer period of time. (Gasum, 2011)

Traditional energy sources are targeted with higher taxation from the government. As written before, Finland tries to decrease the consumption of traditional energy and to increase the consumption of renewable energy in the country. As consumers buy energy from corporations in Finland, they buy energy which is combined from production of both traditional energy sources and renewable energy sources. As time goes by the amount of renewable energy has and will increase in the total energy production which customers buy. It is also possible to buy energy which is produced from renewable energy sources only. The price can be different and it depends on the company which produces and distributes the energy for consumers. (Lappeenrannan Energia, 2012)

When company offers traditional fossil fuels for cars, gasoline and diesel, it needs to pay taxes from selling the fuel. Taxation of fossil fuels has rose in the past few years and the Finnish government's target is to raise the fossil fuel tax in total 10 % during the years 2012 and 2013. The traditional way is that the taxes will increase the price of gasoline for consumer. (Ministry of Finance of Finland, 2011)

If consumers use renewable energy for cars, they will get cheaper taxation for the car and also the price of renewable fuel is much lower today when compared to the traditional fossil fuels. Today normal gasoline for car costs in average above 1,60 euros per liter when natural gas for car is 1,46 euros per kilogram. One kilogram of natural gas for car is equal to 1,56 liters of gasoline and 1,39 liters of diesel. (Gasum, 2012)

2.2 Economical factors

Gasum has an exclusive right for importing natural gas to Finland from Russia. With this monopoly it can determine the price of natural gas in Finland. The price of natural gas has increased 39,9 % y/y in 2012. This increase has had negative effects to the consumption of natural gas. In the current economic situation this price increase has decreased the amount of users of natural gas as a source for energy for houses. People, who have used natural gas as an energy source earlier, now use cheaper energy sources for heating. If the pricing would have been done more consumer friendly, they would have more customers. (Statistic Finland, 2011)

The economic situation provides a good opportunity for companies in a way of financing. Money is cheaper to get from the international markets as mid swap rates has decreased very much. For example 5 year mid swap rate in 10.10.2012 is 0,75 % and three years ago it was 3,00 %. This means that the money which company gathers through corporate bonds is 2,25 % cheaper and it makes a big difference when talking about millions of Euros. The company need to pay a margin on top of the mid swap rate, but if the company is very big and stable the margin will be smaller because investors appreciate companies which are bigger and have good financial stability. This way that company has less risk of going into financial problems. (The Financials, 2012)

Inflation plays the biggest role in the salary and also in research and development expenses. Inflation does not affect energy prices, it is actually so that energy prices affect to the inflation. Things that affect to the prices are production organizations like OPEC, Organization of the petroleum exporting countries, and the situation in the producing countries. Most often the oil prices increase when there is a crisis in the Middle-East. Often a risk of war in the Middle-East and the hurricane season in Central-America increase the price of oil. This is because the production and distribution is in great risk and at the same time the consumption of oil is at normal level and doesn't decrease. (OPEC, 2012)

The oil which is produced by OPEC countries is called Brent oil. Russia produces Urals oil which is a bit different to Brent. Still these prices follow each other with a small margin. (Neste Oil, 2012)

2.3 Social and environmental factors

Nowadays consumers think more ecologically. They think more what their effect to the environment is as they purchase something. Environmental factors are today a part of social factors as ecological consumption is a trend even in energy consumption. As natural gas will end at some point in the future, Gasum and other companies have taken steps towards renewable energy sources, methane for example. As technology advances, methane can be used more efficiently in the future for heating and as fuel for cars. With greener energy, the health of population will increase as they breathe cleaner air and the environment is safe from toxic wastes. Social responsibility is carried also by creating more jobs through renewable energy and technologically efficient ways of energy production.

2.4 Technological factors

Technology plays a huge part in these kinds of clusters. To produce energy safely and efficiently, companies need to have the best technology at their hands. This creates a safer environment for production and more efficient way to produce energy without a need of throwing away a possible production material. As companies are clustered together, they will change new technology between each other and also the information about more efficient use of the current technology. More ecological way of production is the only thing which can create some barriers for entering the markets, because building new factories mean higher expenses and also as technology advances the latest technology usually is more expensive.

2.5 Legal factors

Companies need to obey most importantly environmental laws as they work in energy business. Producing natural gas and fossil fuels can have an environmental effect if not produced by the rules. Consumer law plays a big role also in their business. For example if a fossil fuel includes some material which should not be in there, it can destroy the customer's car. Safety of their employee's is also one crucial thing which needs to be considered when producing traditional and renewable energy. Legislation for energy production is firm in Finland, due high safety and environmental legislation. (Finnish Energy Industries, 2012)

3 Factor analysis: opportunities and constraints for the particular trans-border cluster to grow

Opportunities:

- Finnish government supports the production of renewable energy with tariffs, production support and with financial support for investments.
- Target to Finland is to get 38% of the national energy consumption from renewable energy sources before the year 2020. (Gasum, 2011)
- Good financing opportunities for companies (The Financials,2012)

- Ecological consumption (greener energy), health safety
- Changing of the new technologies, innovations with the cluster companies.

Constraints:

- Taxes rates
- Monopoly of importing gas (no competitiveness, Gasum determined the prices)
- Access to financing
- Insufficient capacity to innovate

(World economic forum, 2012, the most problematic factors for doing business)

- Political risks (inflation, crisis in the middle-East, risk of war)

Further development of the strategic relationships is in the interest of both sides Finland and Russia. Committing the Russian companies to the Finnish economy through strategic partnerships and investment opportunities would benefit not only the Russian companies' ambitions abroad but also the Finnish counterparts dependent on the Russian supplies. From the viewpoint of Finnish companies interested in entering Russia, it should be noted that the Russian energy sector has high barriers for entry because of the access to main energy resources is already reserved to a few major players. Also, transport is controlled by natural monopolies (gas pipelines and power transmission lines). The state ownership in the oil industry is increasing and the gas sector is firmly in state hands. Moreover, the splitting of natural monopolies into smaller units does not necessarily result in increased competition if these units are controlled by the public sector. In the sphere of energy saving and environmentally sound technology there are good prospects for Finnish-Russian cooperation. (Oksana Ivanova, Hannu Kaipio, Päivi Karhunen, Simo Leppänen, Olga Mashkina, Elmira Sharafutdinova, Jeremy Thorne, 2006)

Over the first 25 years of business relationship, Gazprom had established close and strong ties with the Finnish firm Neste re-incorporated after its merger with Imatran Voima into the Fortum Concern. The bilateral cooperation between Gazprom and

Fortum led to the foundation in 1994 of the Gasum joint venture taking on itself gas imports and marketing as well as gas transmission network operation and development in Finland. At present, Gasum's authorized capital is divided in the following way: Gazprom (25%), Fortum (31%), the Finnish State (24%) and E.ON Ruhrgas AG (20%). In 1994, upon successful fulfillment of the first 20-year Contract commitments, the parties entered into a new through 31 December 2014 Agreement recently extended until year-end 2025. (Gazprom, 2005)

4 Cluster analysis

4.1 Finnish perspective

With one of the most common traditional energy source, oil, the access to the resources is only in Russia. As Finnish companies do not have any possibility to access any oil fields, they can only purchase the oil from Russian companies for example Gazprom or Lukoil. From the total consumption of energy in Finland, 68,2 % from this energy comes as imported energy from Russia and most of this is oil. (Statistic Finland, 2012a)

Some traditional energy sources can be found and produced for distribution in Finland. Finnish energy companies do not export much the energy which they manufacture from traditional energy sources. (Statistic Finland, 2012b) Finnish companies, for example Neste Oil, use mostly the Russian oil called Urals for producing gasoline and diesel for cars and other types of products like petrochemicals. (Neste Oil, 2011)

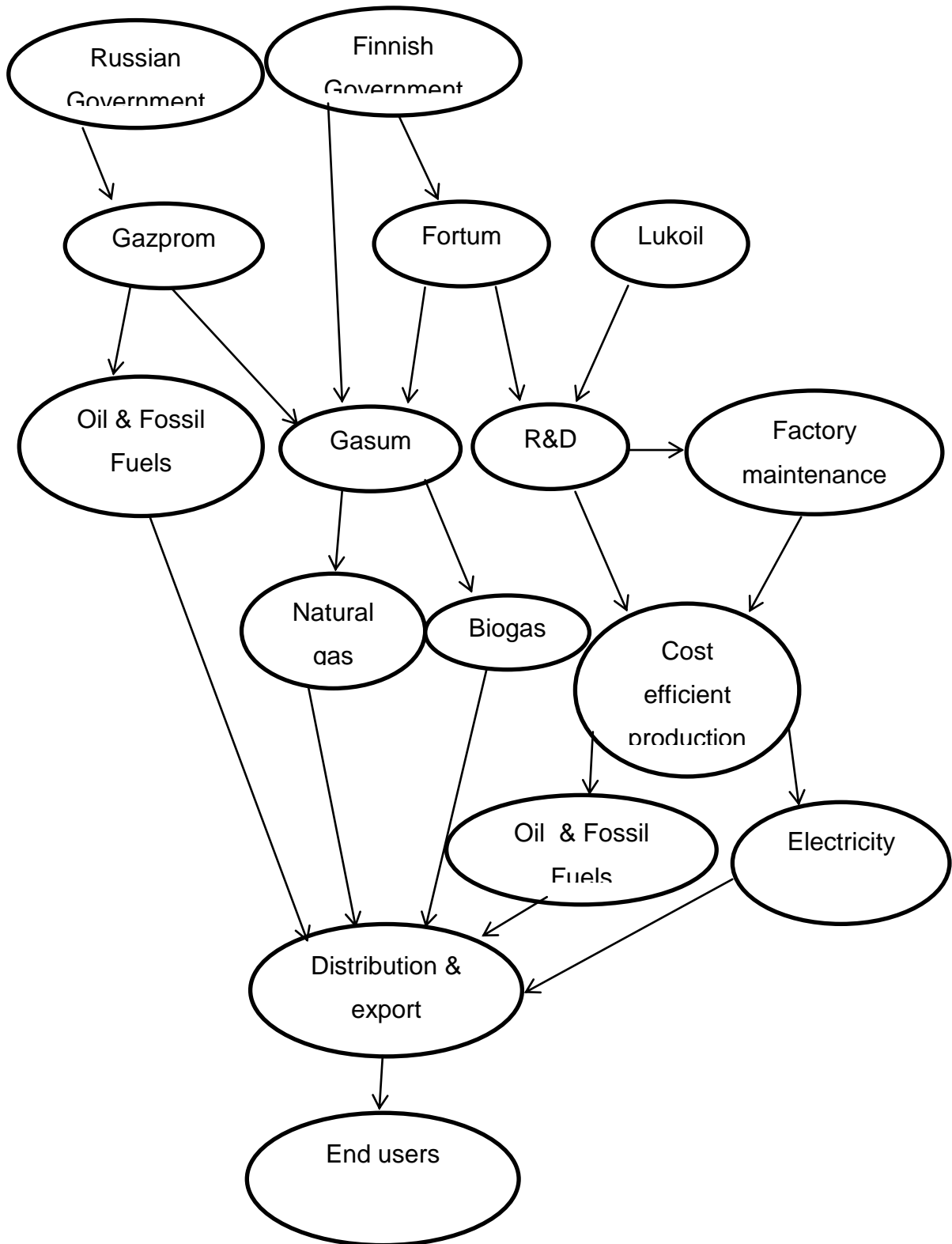
With renewable energy production, Finland is one of the leading countries in producing of bioenergy. This is a big opportunity for Finnish companies to start manufacturing renewable energy even for exporting. Bioenergy is the latest product

in energy section. Every country is trying to decrease the use of traditional fuels by replacing traditional energy sources with renewable energy sources. Renewable energy sector has become one of Finland's most important technology sectors in terms of research and development and for exporting these technologies for other countries. (Ministry of employment and the economy, 2011)

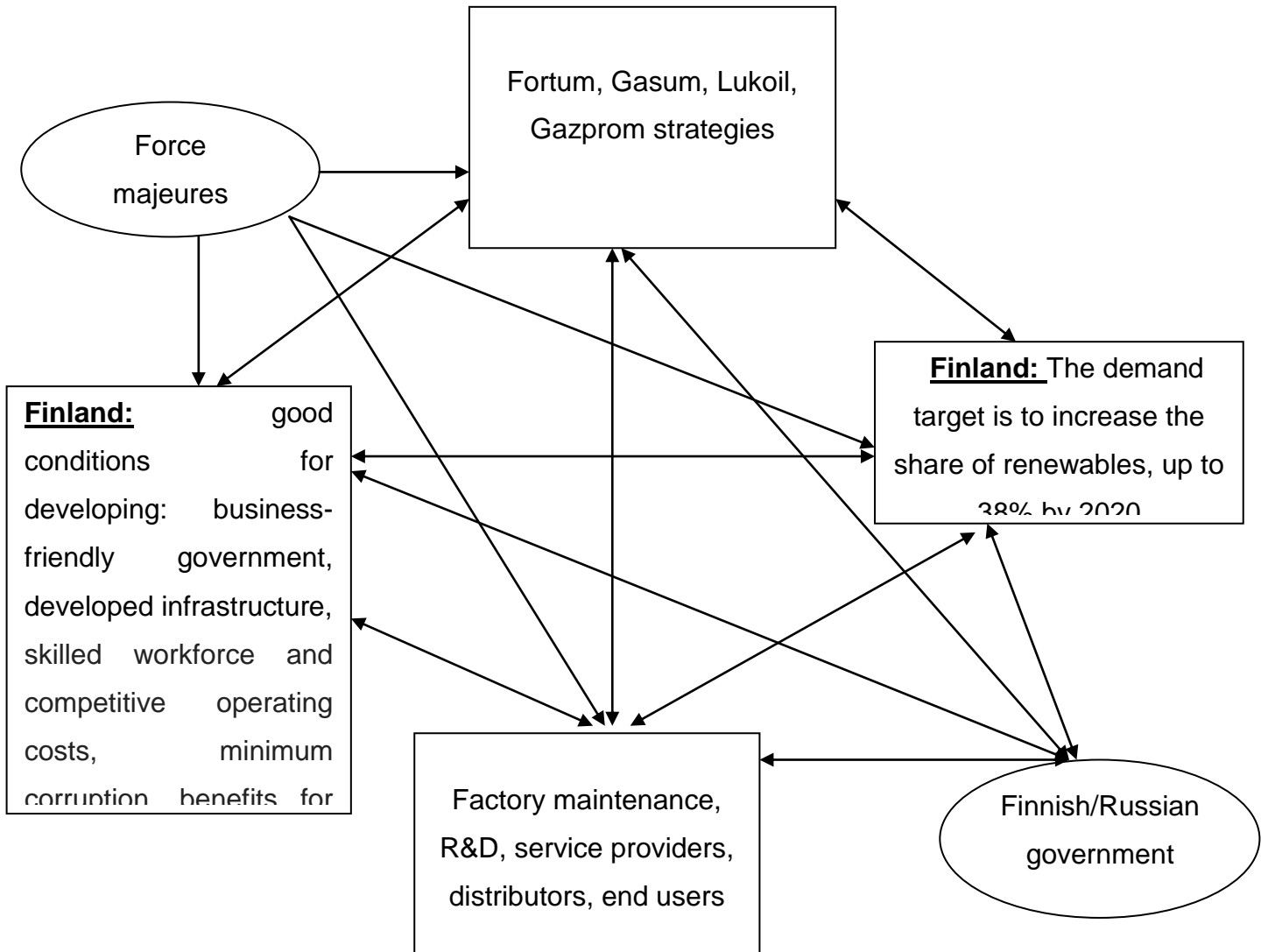
Finland and Russia has signed an agreement where they will find methods to use energy more efficiently. This research includes development of energy market and promotion of energy efficiency including bioenergy. (Ministry of employment and the economy, 2012)

What Finnish and Russian companies could do as a cluster is to do more collaboration so that they could enter the international markets in Europe as well. As the target for European Union is to decrease the use of fossil fuels, it would bring up more opportunities for new innovations for the energy production industry. With the newest technology, companies can do energy from landfills and so it can be a possibility to gather the waste from households to a production line and from there it can be transferred into energy for re-use.

5 Gazprom – Fortum – Lukoil cluster map



6 Cluster diamond model



Conclusion

In conclusion we can repeat the main idea of collaboration and cooperation Finland and Russia in energy sector for benefit, for changing the technologies for development and creation of new methods of using and getting energy and for making people life better, warmer and brighter.

What Finnish and Russian companies could do as a cluster is to do more collaboration so that they could enter the international markets in Europe as well. As the target for European Union is to decrease the use of fossil fuels, it would bring up more opportunities for new innovations for the energy production industry. With the newest technology, companies can do energy from landfills and so it can be a possibility to gather the waste from households to a production line and from there it can be transferred into energy for re-use.

This research is only first and short step in studying the issues of internationalization of the clusters, and many theoretical and field studies are needed to get a comprehensive picture of this phenomenon.

Our analysis therefore speaks for a vast number of potential projects of Russian-Finnish cooperation, the potential of implementing which is understood by many market players. As the barriers to cooperation are removed, the intensity of cooperation processes between companies in the energy clusters of the Northwest Russia and Finland will increase at high rates.

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CLUSTER PROJECT

TRADITIONAL ENERGY: NORTHWEST REGION OF RUSSIA

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Introduction

Foreign economic relations of Russia with the EU and other regions of the world develop not only in the form of exports and imports, but also in the form of joint ventures, establishment of special economic zones, the development of production with use of Russian and Western innovation technologies.

Energy is one of the key sectors of the Russian economy. Today, the Russian energy sector has considerable financial resource, scientific and technical potential, as well as all necessary conditions for accelerated and sustainable innovation evolution. Energy sector is able to take in technological borrowings successfully, join resources and new technologies, and to promote innovative modernization of the major part of processing and manufacturing industries.

One form of improving the competitiveness of the energy industry is clustering, including cross-border cooperation. Russian-Finnish energy cluster seems very possible. Finland uses the cluster approach in its economy for long time, it is a country with high competitiveness and great reputation in the field of research and development, and, by-turn, doesn't have its own energy resources, and satisfies demand for them completely with the help of Russian products, it is reliable trade partner for Russia. In 2011, Russia has retained the status of Finland's largest trading partner.

Further development of the strategic relationships is in the interest of both sides Finland and Russia. Committing the Russian companies to the Finnish economy through strategic partnerships and investment opportunities would benefit not only the Russian companies' ambitions abroad but also the Finnish counterparts dependent on the Russian supplies. In the sphere of energy saving and environmentally sound technology there are good prospects for Finnish-Russian cooperation.

The main objective of the study is to discuss the prospects of cooperation between Northwest Russian and Finnish energy sectors, i.e. networks of firms specialized in the energy related fields, including production, processing and distribution of energy raw materials and electricity, power engineering, energy services etc. It is obvious that both sides can widely use resources and competences of each other.

Our goals were to explore:

1. Russian national competitiveness using country diamond model by M. Porter. Competitiveness of the Northwest Federal District of Russian Federation;

2. Assessment of national institutional and business environment for the traditional energy trans-border cluster – PESTLE-analysis (Russia);
3. Opportunities and constraints for this cluster to grow;
4. Cluster analysis;
5. Creation of the cluster map;
6. Cluster diamond model.

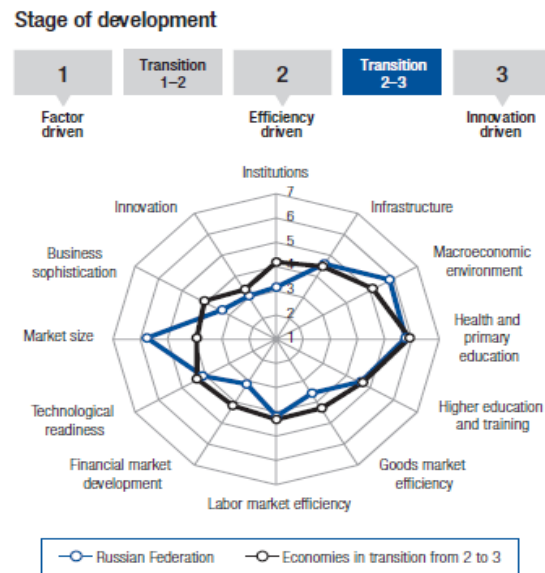
For the study, we used a wide range of sources: monographs on the subject, Russian, Finnish and international statistical sources, the resources of the Internet to provide the most up to date information

1. National competitiveness (country diamond model by M. Porter)

According to the Global Competitiveness Report 2012-2013, Russian Federation is at 67th place and drops one position since last year. A sharp improvement in the macroeconomic environment—up from 44th to 22nd position because of low government debt and a government budget that has moved into surplus—has not been enough to allow the country to compensate for the poorer assessment of its already weak public institutions (133rd) and the innovation capacity of the country (85th this year, down from 57th in the 2010–2011 edition of the GCI). The country suffers from inefficiencies in the goods (134th), labor (84th), and financial (130th) markets, where the situation is deteriorating for the second year in a row. The weak level of competition (136th)—caused by inefficient anti-monopoly policies (124th) and high restrictions on trade and foreign ownership as well as the lack of trust in the financial system (134th)—contributes to this inefficient allocation of Russia’s vast resources, hampering higher levels of productivity in the economy. Moreover, as the country moves toward a more advanced stage of economic development, its lack of business sophistication (119th) and low rates of technological adoption (137th) will become increasingly important challenges for its sustained progress. On the other hand, its high level of education enrollment, especially at the tertiary level; its fairly good infrastructure; and its large domestic market (7th) represent areas that can be leveraged to improve Russia’s competitiveness. (World Economic Forum, 2012)

The Global Competitiveness Index 2012-2013: Russian Federation

	Rank (out of 144)	Score (1-7)
GCI 2012-2013	67	4.2
GCI 2011-2012 (out of 142).....	66	4.2
GCI 2010-2011 (out of 139).....	63	4.2
Basic requirements (30.0%)	53	4.8
Institutions	133	3.1
Infrastructure	47	4.5
Macroeconomic environment	22	5.8
Health and primary education.....	65	5.7
Efficiency enhancers (50.0%)	54	4.3
Higher education and training.....	52	4.6
Goods market efficiency	134	3.6
Labor market efficiency	84	4.2
Financial market development	130	3.2
Technological readiness.....	57	4.1
Market size.....	7	5.8
Innovation and sophistication factors (20.0%)	108	3.2
Business sophistication	119	3.3
Innovation.....	85	3.0



Source: World Economic Forum, 2012

- **Factor conditions:**

In 2003 Michael Porter considered Russian competitive advantages and disadvantages:

Positive factors:

- 1) Human Resources (Quality of Math and Science Education, Quality of Educational System, Quality of Public Schools, Cooperation in Labor-Employer Relations),
- 2) Science and Technology Base (Quality of Scientific Research Institutions, Availability of Scientists and Engineers),
- 3) Physical Infrastructure (Railroad Infrastructure Quality, Port Infrastructure Quality).

Russia has many problems with:

- 1) Openness and Vitality of Competition (Foreign Ownership of Companies, Intensity of Local Competition, Hidden Trade Barrier Liberalization, Adequacy of Public Sector Legal Recourse, Tariff Liberalization, Effectiveness of Anti-Trust Policy, Extent of Distortive Government Subsidies, Efficacy of Corporate Board),
- 2) Administrative Efficiency and Transparency (Extent of Bureaucratic Red Tape, Police Protection of Businesses, Favoritism in Decisions of Government, Officials Judicial Independence, Business Costs of Corruption),
- 3) Efficiency of Financial Markets (Protection of Minority Shareholders, Regulation of Securities Exchanges, Financial Market Sophistication, Existence of Bankruptcy Law, Ease of Access to Loans, Local Equity Market Access, Venture Capital Availability),

4) Quality of the Regulatory Environment (Intellectual Property Protection, Laws Relating to Information Technology, Stringency of Environmental Regulations).

He advised to create the microeconomic foundations of sustainable prosperity in Russia:

- Raise the productivity of the Russian business environment
- Adopt a cluster-based approach to economic development
- Push economic strategy to the regional level
- Shift the roles of government, business, and other institutions in economic development.

(Michael E. Porter. Russian Competitiveness: Where Do We Stand? 2003

http://www.isc.hbs.edu/pdf/CAON_Russia_2003_Harvard_Symposium_11-13-03_CK.pdf)

What we have today.

According to the Worldbank, in 2011 Russia was the ninth-largest economy in the world in terms of nominal value (1,857,770 millions of US dollars) and the sixth-largest in terms of purchasing power parity (3,015,670 millions of international dollars). (Worldbank, 2012 <http://databank.worldbank.org/>)

It has an abundance of natural gas, oil, coal, and precious metals, which its economy is highly dependent on. The country has undergone significant changes since the collapse of the Soviet Union, moving from a centrally planned economy to a more market-based and globally integrated economy. Russia has a strong current account surplus.

1. Main Economic indicators during 2008-2013

	2008	2009	2010	2011	2012e	2013f
GDP at current prices (billion USD)	1661.0	1222.0	1488.0	1858.0	1951.0	2089.0
GDP per capita at current prices (USD)	11,710.0	8,620.0	10,410.0	12,990.0	13,660.0	14,660.0
GDP (% change)	5.2	-7.8	4.3	4.3	3.7	3.7
Gross fixed investment (% change)	10.6	-14.4	5.8	8.0	6.0	7.0
Private consumption (% change)	10.6	-5.1	5.2	6.8	4.8	4.4

Exports (% change)	0.6	-4.7	7.0	0.4	4.8	6.1
Imports (% change)	14.8	-30.4	25.8	20.3	11.9	10.2
Consumer price index (% change, yearly average)	14.1	11.7	6.9	8.4	5.1	6.5
Unemployment rate (%)	6.4	8.4	7.5	6.6	6.2	6.1
Exchange rate (yearly average) RUB/1 USD	24.9	31.7	30.4	29.3	31.0	
Exchange rate (yearly average) RUB/1 EUR	36.5	44.2	40.3	40.8	39.8	

Source: Economist Intelligence Unit <http://www.eiu.com/Default.aspx>

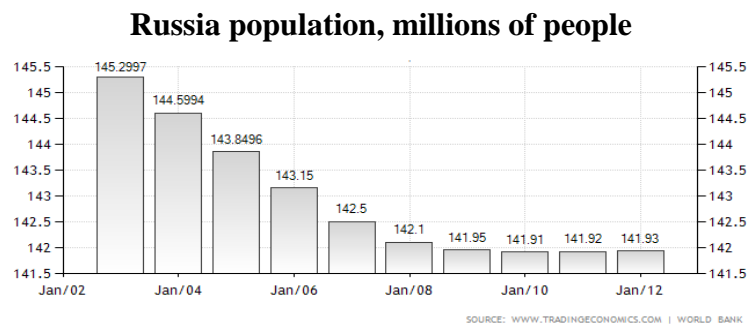
The Russian government seeks to step up activities in field of R & D by strengthening links between scientific and educational institutions and business. Many institutions and enterprises are seeking to collaborate with foreign counterparts. For example, one of the main objectives of “The strategy of socio-economic development of the North-West Federal District – 2020” - is international cooperation in the field of innovation, the development of joint researches and technology transfer, organized system of exchange of scientists, experts from leading European, particularly Scandinavian, research centers, the practice collaborative scientific and educational projects with major universities from Central and Eastern Europe, America, Scandinavia. (Ministry of Region Development, 2011 http://www.minregion.ru/upload/documents/2012/01/230112/230112_2074_r_str.pdf)

Despite its established and seemingly stable political structure, Russia is considered to be one of the most corrupt nations (ranking 143rd among 180 countries) in the world. Corruption is rampant among law enforcement bodies and judges, and court decisions are often difficult to implement. The government has not been very effective in controlling criminal activities and corruption. Many foreign investors have experienced problems executing judicial rulings and obtaining approval on contractual agreements, which is proving to be a major obstacle for FDI inflow. (Transparency Internationals Corruption Perception Index, 2011 <http://cpi.transparency.org/cpi2011/>)

The total population in Russia was last recorded at 141.9 million people in 2011. The population of Russia represents 2.06 percent of the world’s total population which arguably

means that one person in every 49 people on the planet is a resident of Russia. (Worldbank, 2012)

High mortality and morbidity among the Russian working population has become a huge challenge to economic and social development. Currently, Russia's demographic crisis is considered more serious than that of Western Europe. The high mortality rate is expected to exacerbate the problem of a diminishing labor force.

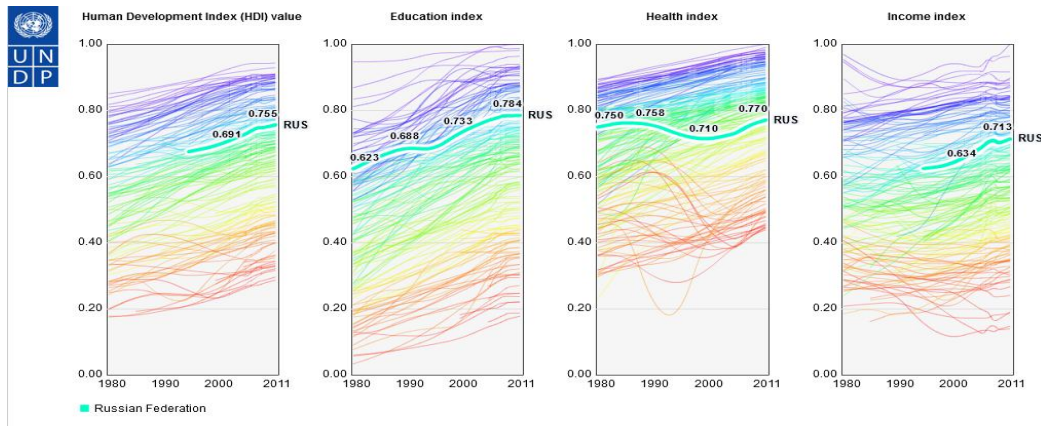


Source: www.tradingeconomics.com / Worldbank

Russia is lagging in fundamental research. Recently, the science and technology system in Russia has been falling short of international standards due mainly to irrelevant controls imposed by the archaic structures of the Soviet system over scientific streams. The main problems include language barriers, weak networking and co-ordination of activities, lack of active presence in international meetings, discrepancies in intellectual property rights and policies, and various political obstacles and differences among scientific bodies. In The Global Innovation Index 2012 Russia is 51 out of 141.

But Russian Federation's Human Development Index is 0,755, which gives the country a rank of 66 out of 187 countries with comparable data. The HDI of Europe and Central Asia as a region increased from 0,644 in 1980 to 0,751 today, placing Russian Federation above the regional average. (Human Development Report, 2011 <http://hdrstats.undp.org/en/countries/profiles/RUS.html>)

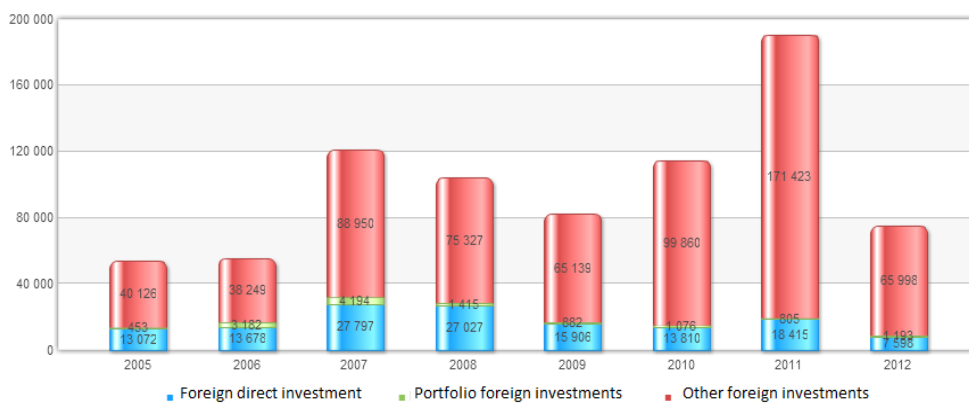
Russian Federation's Human Development Index



Source: Human Development Report, 2011 <http://hdr.undp.org/en/data/trends/>

Russia is increasing its access to international labor by relaxing its immigration laws. The new liberal immigration laws have brought in many foreign workers, especially from the EU region. Relaxed immigration laws have played a vital role in attracting foreign direct investment (FDI) and, in Russia's case, it is presently acting as a boost to its economy. Foreign investment in Russia began to increase substantially since 2007, but the global economic crisis in 2008-2009. reduced foreign investment.

Foreign investment in Russia, millions of US \$



Source: Ministry of Finance of Russian Federation, 2012 <http://info.minfin.ru/prom.php>

Doing business – 2013 place Russia on 112th position.

Rating Doing business – Ranking of economy (2013)

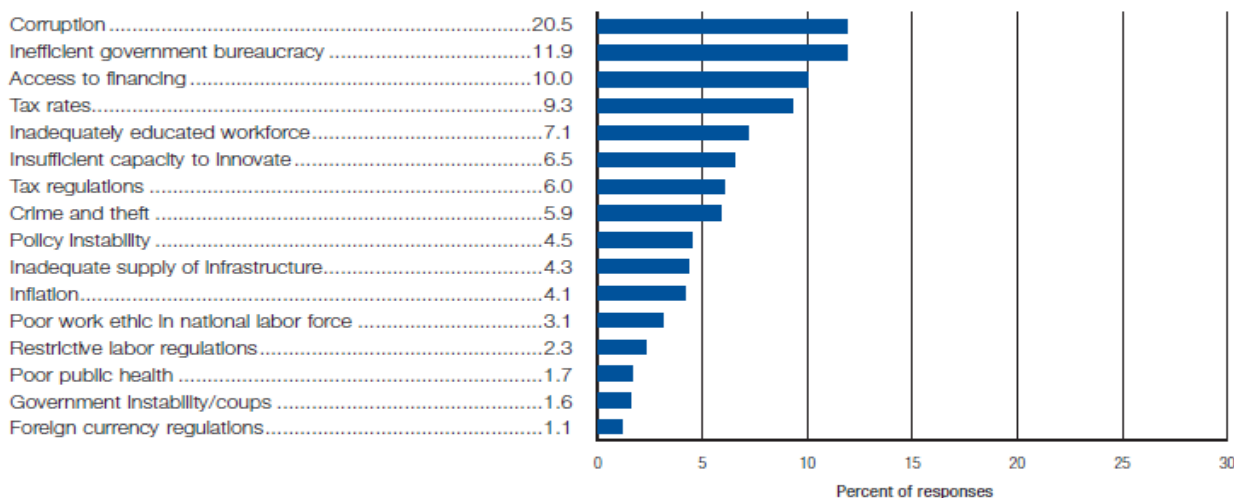
Economy	Ease of Doing Business Rank	Starting a Business	Dealing with Construction Permits	Getting Electricity	Registering Property	Getting Credit	Protecting Investors	Paying Taxes	Trading Across Borders	Enforcing Contracts	Resolving Insolvency
Finland	11	49	34	21	24	40	70	23	6	9	5
Russia	112	101	178	184	46	104	117	64	162	11	53

Source: Doing business report, 2013 <http://www.doingbusiness.org/rankings>

According to The Global Competitiveness Report 2012-2013, the most problematic factors for doing business are following:

The most problematic factors for doing business in Russia

The most problematic factors for doing business



Note: From the list of factors above, respondents were asked to select the five most problematic for doing business in their country and to rank them between 1 (most problematic) and 5. The bars in the figure show the responses weighted according to their rankings.

Source: World Economic Forum, 2012

- **Demand conditions**

The demand for electricity, oil and gas can be divided into three main areas:

- domestic demand by enterprises;
- domestic demand by the population;
- external demand (exports).

Domestic demand for energy is determined by the dynamics of the expected economic development, changes in the economic structure and the level of its specific energy consumption.

Reduction of energy intensity of the economy is central to Russian energy policy. The solution of this problem requires a rational restructuring of the Russian economy. Low-power industry manufacturing, specializing in the high technology production, will develop rapidly. Also it will be an energy conservation policy. The result of structural changes in the economy and of the energy conservation policy should be a significant reduction in energy consumption in Russia by 2030, which will adequately reflect the dynamics of the domestic demand for primary energy and electricity. (Russian Energy Strategy - 2030, http://минэнерго.рф/aboutminen/energostrategy/ch_4.php)

Key factors affecting the domestic demand for Russian energy, the following:

- huge domestic market of consumers of energy;
- reconstruction and development of the Russian economy, and as a consequence, the growth of energy resources demand;
- gasification of settlements that are not connected to gas pipelines;
- cold climate in Russia, and as a result, an increase in consumption in the winter;

But increasing of energy tariffs is one of the main factors contributing to inflation and, consequently, loss of purchasing power. Obstacles to increasing competition among generating companies are the high customs duties on imported equipment, high requirements for certification of distributed generation facilities, the lack of a uniform standard for their connection to the grid and possible opposition from the grid and generating companies.

In recent years, Russia is a leader in extraction volume of crude oil and provides 12 percent of the global oil trade. More than four fifths of the Russian oil is exported to Europe, Russia's share in its market is about 30 percent.

Russia ranks first in the world in natural gas reserves (23 percent of world reserves) and the volume of its annual production, providing 25 percent of world trade of this energy source, dominating both in the European gas market and the market of the Commonwealth of Independent States. With its unique gas transmission system, Russia plays an important role in securing gas supplies to Europe and the Commonwealth of Independent States.

Russia holds the world's second largest reserves of coal (19 percent of world reserves), fifth place in terms of annual production (5 percent of world production) and provides about 12 percent of world trade of steam coal.

Russian nuclear energy equals to 5 percent of the world market of nuclear power generation. (Russian Energy Strategy - 2030, http://минэнерго.рф/aboutminen/energostrategy/ch_4.php)

Key factors affecting the external demand:

- relatively low cost of Russian energy resources;
- wide pipeline network of Russian oil, gas and electric companies;
- increasing needs of foreign countries for energy resources;

But high dependence of the EU on Russian energy resources leads to the adoption of legislation aimed at limiting the activities of Russian companies, such as European Union competition law effect on Gazprom's activities; increased competition in some regional markets, reduces the share of oil and gas companies from Russia in their markets; there are some economic and political conflicts, resulting in the suspension of Russian gas deliveries by transit countries, it affects the reputation of Russian oil and gas companies as a reliable exporter.

- ***Related and supporting industries***

- Transport and logistics,
- Related equipment manufacturing
- ICT
- Shipbuilding
- Chemicals
- Metallurgy and metalworking
- Automatic controls

Nowadays oil and gas sector in Russia is represented by vertically integrated companies, which include subsidiaries engaged in various spheres of activity. Main oil and gas companies prefer to have their own subsidiaries and divisions, covering all stages of the process in the petroleum industry, which is a network of related and supporting industries.

There are examples of areas of subsidiaries in the large vertically integrated Russian company (Gazprom, 2012 www.gazprom.ru/about/subsidiaries/list-items).

1. Geological exploration - Gazprom exploration;
2. R & D - Ecological and Analytical Center of the gas industry;
3. Investment sphere - Gazprom investholding;
4. Extraction of energy resources;
5. Transportation - Gazpromtrans;

6. Manufacture of machinery and equipment for the oil and gas sector - Gazmash;
7. Recycling of oil - Gazprom processing;
8. Export activities - Gazprom export;
9. Electricity production and sales - Gazprom energy;
10. Repair and maintenance of equipment;
11. Information support for the company - Gazprom inform, Gazprom-Media;
12. Telecommunication services;
13. Security Services - Gazprom security;
14. Recruitment - Gazprom personnel;
15. Financial services - Gazprombank;

In the process of the reform of RAO "UES of Russia" (2004 -2008) vertical integration of generation and transmission activities was eliminated. Network, distribution and dispatch activity remains under state control. Tariffs are set by the Federal Tariff Service. Generation and distribution are free to competition.

- ***Firm strategy, structure and rivalry***

Energy industry has high barriers to entry, because of the high capital intensity of the industry. Currently, several large, vertically-integrated public and private companies kept under control all stages of the technological process and related services. They enjoy limited competition as a result of an industrial structure inherited from the Soviet period. The development of the energy companies in Northwest of Russia is stimulated by transit trade and the processing of raw materials from other regions. Already today, St. Petersburg and the Leningrad region are the hubs through which natural gas, oil, petrochemicals, coal, electric power, and other commodities are exported to Western markets. The growth of the transit of energy products creates further opportunities for establishing new industrial facilities (oil refineries, power plants, etc.) in the region. This could also create new opportunities for related engineering and technology companies, and conditions for closer cooperation between local suppliers. In Russia, there are no legal restrictions on the availability of some branches in one holding and no restrictions on market share.

As an example, we can reduce the main goal of "Gazprom" - Becoming a leader among global energy companies by entering new markets, diversifying activities, and ensuring security of supply. (Gazprom, 2012 <http://www.gazprom.ru/about/strategy/>)

- **Government**

Oil and gas and electric power industries are strategically important for Russia's development. To maintain them Russian government takes action:

1. Protection of competition among the enterprises of oil and gas and power sectors. For example, from 2007 to 2012. The Federal Antimonopoly Service of Russia has "three waves" of antitrust proceedings against vertically-integrated oil companies in order to reveal a violation of paragraph 1 of Article 10 of the Law "On Protection of Competition". Reorganization of "UES of Russia" was also aimed at increasing competition in the electricity sector. (Federal Antimonopoly Service of Russian Federation, 2012, http://www.fas.gov.ru/fas-news/fas-news_32863.html)
2. During the negotiations on accession to the WTO, the Agreement of the immutability of the export duty on oil, natural gas and petroleum products, therefore, the oil and gas companies do not expect a negative impact on the sector from WTO accession.
3. Government provide incentives to enterprises to increase investment volume for the development and application of innovative technologies.
4. Government protects interests of national companies in the European market. For example, Russia is against changing European competition law. (European Commission, 2012, http://ec.europa.eu/index_en.htm)
5. State participation in the field development in the form of public-private partnership.
6. Attracting foreign investment in oil and gas, power industry, according to national interests.

- **Chance** is an unexpected event, or an opportunity that cannot predicted. All factors constantly interact with each other, forming a special business-environment. Features can be divided into positive and negative for the functioning of Russian energy industry in the future.

Positive features:

- Russian energy sector has all necessary conditions for accelerated and sustainable innovation evolution;
- The countries have complementary resources and needs, this fact is of great interest to energy companies and authorities of these countries;
- Comprehensive support of business initiatives and cooperation with foreign countries by the State;

For:

- Changing of the new technologies, innovations;
- Improving the image of Russian companies on the world market;
- Improving the competitiveness of Russian fuel and energy companies

Negative features:

- Increasing of the tax rate on the extraction of natural resources in Russia;
- Changes in legislation in the energy sector, aimed at strengthening the legal framework;
- Lack of interest in reinvesting in innovation in Russian energy companies;
- Increased competition and the weakening of the Russian companies in world markets;
- Depletion of natural resources;
- Aging of population, declining of working-age population;
- Input into a new phase of economic recession;
- Threats to political stability, inconsistent political decisions.

The Northwest Federal District

The Northwest Federal District (NWFED) is one of the seven federal districts in Russia. It includes: the Republic of Karelia, Republic of Komi, Arkhangelsk region, Nenets Autonomous District, Vologda region, Kaliningrad region, Leningrad region, Murmansk region, Novgorod region, Pskov region and the City of St. Petersburg. The administrative center of the NWFED is the City of St. Petersburg.

Top 15 Companies (by Sales) of Northwest Russia in 2011

2012 г.	Company	Region	Branch	Sales in 2011, RUR million.	Sales in 2011, USD million.	Profit after taxes in 2011, RUR million	Profit after taxes in 2011, USD million
1	Gazprom Oil	St. Petersburg	Oil and gas industry	1 029 803,00	35 039,20	160 362,00	5456,341
2	Severstal	-	Ferrous metallurgy	464 726,40	15 812,40	59 803,70	2034,83
3	Bank VTB	-	Bank Industry	437 900,00	14 899,60	90 500,00	3079,276
4	Rostelecom	-	Telecommunications	296 015,00	10 072,00	46 240,00	1573,323
5	SIBUR Holding	-	Chemical and petrochemical industry	248 660,00	8 460,70	62 829,00	2137,766
6	LUKOIL- Komi	Republic of Komi	Oil and gas industry	244 217,80	8 309,60	40 950,40	1393,343
7	Group "Avtotor"	-	Machine-building	127 097,20	4 324,50	-	-
8	Lenta	St. Petersburg	Retail Trade	98 379,40	3 347,40	3 818,80	129,9352
9	Nissan Manufacturing RUS	St. Petersburg	Machine-building	97 821,30	3 328,40	2 346,00	79,823

10	Group "O'Kay"	-	Retail Trade	93 134,40	3 168,90	3 239,90	110,2381
11	NARYANMAR NEFTEGAZ	Archangelsk Region	Oil and gas industry	93 053,80	3 166,20	-15 727,70	-535,137
12	Beer company "Baltic"	-	Food industry	89 795,20	3 055,30	17 713,20	602,6943
13	Air company "Transair"	-	Transport	86 494,40	2 943,00	1 831,90	62,33067
14	Agrotorg	St. Petersburg	Retail Trade	84 932,70	2 889,80	3 831,90	130,381
15	LUKOIL Uchtanefteperer abotka	Republic of Komi	Oil and gas industry	77 571,40	2 639,40	9 724,70	330,8844

Source: <http://www.expertnw.ru/news/24/716.html>

There are 5 companies of energy sector in top-15 companies (by sales) of Northwest Russia in 2011. Location of these companies: Saint-Petersburg, Republic of Komi, Archangelsk Region.

Main Industrial Specialization of the Northwest Russian Regions

Republic of Karelia – Forest industry, ferrous metals

Republic of Komi – Oil and gas, forest industry, power production

Archangelsk Region – Forest industry, machine-building

Nenetsk Autonomous District – Oil and gas

Vologda Region – Ferrous metals, chemicals

Murmansk Region – Non-ferrous metals, power production, fishing

St. Petersburg – Metal-processing and machine-building, food & beverages

Leningrad Region – Petrochemicals, power production, forest industry

Novgorod Region – Chemicals, food & beverages

Pskov Region – Food & beverages, machine-building

Kaliningrad Region – Fishing, machine-building

SWOT-analysis of the Russian Northwest (traditional energy)

Strengths	Weaknesses
<ul style="list-style-type: none"> • Substantial raw material resources (oil, gas, ferrous and non-ferrous metal ores, wood) • Inherited industrial assets and infrastructure • Inherited education system and R&D in St. Petersburg, Petrozavodsk, Vologda and Arkhangelsk • Inherited human capital (skilled labor force) • The slowdown of population decline in NWFD 	<ul style="list-style-type: none"> • Uneven distribution and low density of population and infrastructure, especially in the areas rich in raw materials • Poor, worn-out infrastructure • Logistics bottlenecks • Lack of intraregional coordination and industrial policy • Lack of financing to build networks for modern communications and transport

<ul style="list-style-type: none"> • Agglomerations of industrial activity • Export potential of leading industrial sectors • Advantageous geographic location next to the Western Europe and its markets • Transport logistics gateways in St.Petersburg, Murmansk and Arkhangelsk • High solvent demand • The emergence of high-tech industries with high level of salaries • Increase of innovation activity • Maintaining a high demand for energy resources 	<ul style="list-style-type: none"> • Limited availability of the qualified workforce and rapid aging of existing professionals • Stagnancy of R&D, aging of the researchers, lack of international cooperation • Excessive number of monopolies • Long distances from manufacturers to consumers • Severe climate and related higher costs of production and living • Low level of skills of arriving migrants • A high share of fuel and energy complex, commodity sector and military enterprises • Poor roads, a significant deterioration of them • Revision of taxes and export duties on energy (Strategic development of the North-West Federal District / A.M. Khodachek // Problems of Modern Economics /. - 2012. - № 01. - P. 241-248.)
<p>Opportunities</p>	<p>Risks</p>
<ul style="list-style-type: none"> • Increasing competitiveness of cluster participants (including natural monopoly sectors) through the introduction of an integrated approach to energy efficiency, reduce energy losses and, therefore, increase on this basis, the competitiveness of regions and the country as a whole • Ensuring a high intersectoral coordination. • Support of the interests of all cluster members, in particular in cooperation with regional and national authorities. (Mikhailov S.N., Balyabina A.A. Regional energy clusters: problems and prospects // Russian entrepreneurship. - 2008. - № 10 Issue 1 (120). - p. 20-25. - http://www.creativeconomy.ru/articles/4863/) • Faster search for alternative energy sources and efficiency • Encouraging to innovation • The use of industrial and scientific international experience • The growth of social and economic prosperity 	<ul style="list-style-type: none"> • "Brain drain" that could weaken the competitiveness • Lack of strategic innovations • Threats to political stability, inconsistent political decisions; • The long process of approval and adoption of the necessary legislation; • Input into a new phase of economic recession; • Reduction in investment activity in Russia and abroad; • Problems in the implementation of cooperation between business and science (Luzin A. Northwestern Federal District: innovative potential and experience of neighbors, 19.07.2011 http://www.promvest.info/news/otraslipredaticle.php?ELEMENT_ID=36136) • Depletion of natural resources • Aging of population, declining of working-age population • Increasing of dependence on energy exports

Geopolitical and economic changes have led to a significant transformation of the role of the North-West Federal District of the Russian Federation in the economy. The main function of the district is providing external economic relations between Russia and the European Union. This led to the rapid development of transport infrastructure and cross-border cooperation, as well as the orientation of a significant part of the business to service international relations.

The value of the North-West Federal District as a large prospective natural resource base is constantly growing. His role in the development of the Arctic territories adjacent to Russia, is recovering.

North-West Federal District, and especially St. Petersburg - is one of the most important centers of scientific and technological progress and innovation development of the Russian economy, of high-tech and modern transport facilities production. There is a high value of the district forestry and fishery complexes. Subjects of North-West Federal District, rapidly develop as a tourist centers. It is one of the most attractive areas of the country which attract people and business from other regions of Russia and abroad.

The North-West Federal District makes a significant contribution of in the general economic potential of the Russian Federation. It accounts for 10 percent of gross domestic product, 12 percent of industrial output and 10 percent of total employment in the national economy. (Ministry of Region Development, 2011. The strategy of socio-economic development of the North-West Federal District – 2020. http://www.minregion.ru/upload/documents/2012/01/230112/230112_2074_r_str.pdf)

In the North-West Federal District there is a big share of elements of the economy with international specialization, including transport infrastructure, such as pipeline transportation, ports, terminals and customs infrastructure, objects of chemical industry, metallurgy and the timber industry. There is a growing international importance of oil and gas industry, shipbuilding, and tourism.

Russian tendencies of economic, social and spatial development are typical for the North-West Federal District.

North-West Federal District is becoming one of the main bases for modernization and innovative development of the Russian economy. Significance of St. Petersburg as a leading center of scientific and technological progress is restored. There is a transfer of innovation and advanced technologies in Russian economic space.

Output of high-tech industries here is about 60 per cent of the total output of the manufacturing industry. The costs of research and development in relation to the gross

regional product in the North-Western Federal District, is 1.4 times higher than the Russian average.

Research and Innovation complex includes more than 500 organizations (13 % of all scientific Russian organizations). Only St. Petersburg has 46 institutions of the Russian Academy of Sciences and other academies. In addition, the Research Centers of Russian Academy of Sciences are in the Republic of Karelia, the Komi Republic, Arkhangelsk and Murmansk regions and the city of Vologda. (Ministry of Region Development, 2011. The strategy of socio-economic development of the North-West Federal District – 2020. http://www.minregion.ru/upload/documents/2012/01/230112/230112_2074_r_str.pdf)

One of the main objectives of “The strategy of socio-economic development of the North-West Federal District – 2020” - is international cooperation in the field of innovation, the development of joint researches and technology transfer, organized system of exchange of scientists, experts from leading European, particularly Scandinavian, research centers, the practice collaborative scientific and educational projects with major universities from Central and Eastern Europe, America, Scandinavia.

Ratings of St. Petersburg:

Investment rating (Russian regions) - 1A. High potential - minimum risk

Business climate of Russian cities - A +. The high level of ease of doing business. Entrepreneurs and investors expand their activities rapidly (Expert, 2012 <http://www.raexpert.ru/database/regions/spb/>)

Ratings of Leningrad region:

Investment rating (Russian regions) - 3B1. Reduced potential - moderate risk (Expert, 2012 <http://www.raexpert.ru/database/regions/len/>)

2. Pestle analysis

2.1. Russia

Economic factors

North-West is industrially oriented area with a well-developed infrastructure. St. Petersburg and the Leningrad region are among the most industrialized regions of Russia. Both are contributors to the federal budget, which indicates the stability and efficiency of their financial and economic systems.

Another competitive advantage of the North-West is a favorable geographical position and access to the sea, it promotes the development of international relations. One of the main advantages of the geographical location of the Leningrad region and St. Petersburg, about the investment climate is its closeness to one of the world's major markets - the European market. Through common borders with two member states of the European Union (Finland and Estonia), Leningrad Region has direct communication with the Northern and Eastern Europe. Thanks to access to the Baltic Sea, Russian Federation has almost unlimited possibilities of communication with all other countries in Europe and more remote regions of the world. (RIA-analyst, 2011. The socio-economic position of the North-West Federal District http://vid1.rian.ru/ig/ratings/Northwestern_FD.pdf)

Recently, in the North-West Federal District is very attractive for investments, for example, there are joint ventures with leading international manufacturers, particularly in the car industry.

Another advantage for investors in St. Petersburg and the Leningrad region are port facilities in these regions and the developed system of railways. Petersburg Sea Port is the largest port in Russia for handling bulk cargo. In the Leningrad region there are several commercial seaports. It includes both long standing port terminals - in Vyborg and Vysotsk and quite new, active developing ports of Primorsk and Ust-Luga.

The inflation rate in 2011 was 6.1%, lower than in 2010. From 2008 it is decline in inflation. The main factor that can increase the inflation - tariffs of natural monopolies, but the Government has taken a range of measures aimed at reducing inflation.

The unemployment rate in the North-West Region is lower than in Russia in general. Within the North-West Region, the lowest unemployment rate is in St. Petersburg, the largest in the Kaliningrad region and the Komi Republic.

There has been a gradual decrease of the refinancing rate.

Oil, gas and electricity sectors are attractive for Russian and foreign investment.

Socio-cultural factors

General level of education of St. Petersburg and the region is quite high. In St. Petersburg there is a well-developed education system, different scientific institutes and design bureaus. Such concentration of "pockets" of science is explained by historical heritage and high level of economic development of St. Petersburg and the region, and as a result, a huge demand for highly qualified personnel. (Energy Consulting, 2011. <http://www.ec-group.ru/press/press/detail.php?ID=400>)

Due to objective reasons (distance from educational institutions) the overall educational and professional level of the Leningrad area is lower. Therefore, in the region may be difficulties with recruitment for large enterprises. However, this disadvantage of the Leningrad region can be offset by the higher mobility of the population from the nearby metropolis. North-West, and especially St. Petersburg and Leningrad region, are attractive to labor migration, despite the fact that Russia's population is characterized by a low level of territorial mobility. St. Petersburg attracts migrants with different experience and level of education.

Because of the complex of active measures to attract investment, there is a constant job creation and employment increasing in the region. In the North-West there is gradual increase in household income in the region, as well as the share of the middle class.

Technological factors

Energy companies invest in R & D and new technologies, because:

- Enterprises have free money that can be directed to the investment;
- Investing in research and development will help companies in the sector to increase productivity;
- Increase of deductions for R & D helps to reduce the cost of production and transportation;
- The use of innovative technologies will reduce the negative environmental impacts of mining operations;
- Complicated structures of the world oil and gas business and the increased risk of its development causes the need to improve the innovation component;

When carrying out investments in the energy sector, some companies create their own research departments or institutions; some companies carry out research projects in state scientific organizations and universities.

Political factors

Oil and gas and electric power industries are strategically important for Russia's development. To maintain them Russian government takes action:

1. Protection of competition among the enterprises of oil and gas and power sectors. For example, from 2007 to 2012. The Federal Antimonopoly Service of Russia has "three waves" of antitrust proceedings against vertically-integrated oil companies in order to reveal a violation of paragraph 1 of Article 10 of the Law "On Protection of

Competition". Reorganization of "UES of Russia" was also aimed at increasing competition in the electricity sector. (Federal Antimonopoly Service of Russian Federation, 2012. http://www.fas.gov.ru/fas-news/fas-news_32863.html)

2. During the negotiations on accession to the WTO, the Agreement of the immutability of the export duty on oil, natural gas and petroleum products, therefore, the oil and gas companies do not expect a negative impact on the sector from WTO accession.
3. Government provide incentives to enterprises to increase investment volume for the development and application of innovative technologies.
4. Government protects interests of national companies in the European market. For example, Russia is against changing European competition law.
5. State participation in the field development in the form of public-private partnership.
6. Attracting foreign investment in oil and gas, power industry, according to national interests.

Legal factors

Activity of energy companies is regulated by a wide range of legal acts that affect almost all aspects of their business:

- Basics of investment activity, regulate such legal acts as the Federal Law of 9 July 1999 N 160 "About Foreign Investments in the Russian Federation", Federal Law of February 25, 1999 N 39 "About investment activity in Russia, the form of capital investments, "St. Petersburg Law" About the state support of investment activity on territory of St. Petersburg "from 30.07.98 № 185-36, etc. (St. Petersburg Investment Agency, 2012. <http://www.spbgapi.ru/useful>)
- The relationship between employees and the company - the Labor Code, the Federal Law of April 19, 1991 N 1032-1 «On Employment in Russian Federation" (Legal Portal «Consultant» <http://base.consultant.ru/cons/cgi/online.cgi?req=doc;base=LAW;n=133337>)
- Basics of competition and prevention of collusion between companies - Federal Law of 29.11.2010 № 135 "On Competition Protection". (Federal Antimonopoly Service of Russian Federation, 2012. http://fas.gov.ru/legislative-acts/legislative-acts_9498.html)
- Sphere of ecology - the Federal Law of 10 January 2002 № 7 "On Environmental Protection", Federal Law of November 30, 1995 № 187 "On the continental shelf of the Russian Federation" (Legal Portal «Consultant», 2012. <http://www.consultant.ru/popular/okrsred>)
- Aspects of Tax - Tax Code
- Responsibility for violation of labor, tax, environmental law - Administrative Code, the Criminal Code

- The basic law in the field of mining - Federal Law "On Subsoil" N 2395-1 of 21.02.1992g, in the electricity sector - Federal Law of 26.03.2003 N 35 "On Power" (Legal Portal «Consultant», 2012. <http://www.consultant.ru/popular/nedr/>)
- Transportation of gas, oil and oil products through pipelines belongs to the sphere of natural monopolies and regulated by the Federal Law "On natural monopolies" (Legal Portal «Consultant», 2012. <http://www.consultant.ru/popular/nedr/>)

In Russia there is still a formation of the legal framework for petroleum and electricity sector in order to eliminate the existing legislative gaps.

Ecological factors

The energy sector has a significant impact on the environment. It happens at all stages of the process, so the industry needs to use the most modern technology to minimize environmental risks.

In oil and gas industry there are the following key environmental issues:

- Collection of oil from the earth and water injection in the deposit may affect the state of rock;
- Oil spill pollutes the soil and water, and it takes great effort and money to eliminate the damage caused to nature;
- As a result of unexpected events (eg, forest fires) oil well may catch fire;
- The issue of conservation of used wells.

The negative impact of power industry on the environment lay in its impact on water resources. The construction of hydroelectric dams can lead to flooding of large areas. Most environmentally friendly power industry is nuclear power, but also there is the possibility of technological disaster and the disposal of spent fuel.

The government, big business and R & D cooperate to develop technologies for all environmental requirements.

3. Factor analysis: opportunities and constraints for the particular trans-border cluster to grow

Opportunities:

- Good financing opportunities for companies (The Financials,2012)
- Changing of the new technologies, innovations with the cluster companies
- Russian energy sector has considerable financial resource, scientific and technical potential, as well as all necessary conditions for accelerated and sustainable innovation evolution
- The countries have complementary resources and needs, this fact is of great interest to energy companies and authorities of these countries

Constraints:

- Taxes rates
- Monopoly of importing gas (no competitiveness, Gasum determined the prices)
- Access to financing
- Insufficient capacity to innovate (World economic forum, 2012, the most problematic factors for doing business)
- Political risks (inflation, crisis in the middle-East, risk of war)

Further development of the strategic relationships is in the interest of both sides Finland and Russia. Committing the Russian companies to the Finnish economy through strategic partnerships and investment opportunities would benefit not only the Russian companies' ambitions abroad but also the Finnish counterparts dependent on the Russian supplies. From the viewpoint of Finnish companies interested in entering Russia, it should be noted that the Russian energy sector has high barriers for entry because of the access to main energy resources is already reserved to a few major players. Also, transport is controlled by natural monopolies (gas pipelines and power transmission lines). The state ownership in the oil industry is increasing and the gas sector is firmly in state hands. Moreover, the splitting of natural monopolies into smaller units does not necessarily result in increased competition if these units are controlled by the public sector. In the sphere of energy saving and environmentally sound technology there are good prospects for Finnish-Russian cooperation. (Oksana Ivanova, Hannu Kaipio, Päivi Karhunen, Simo Leppänen, Olga Mashkina, Elmira Sharafutdinova, Jeremy Thorne, 2006)

2. Over the first 25 years of business relationship, Gazprom had established close and strong ties with the Finnish firm Neste re-incorporated after its merger with Imatran Voima into the Fortum Concern. The bilateral cooperation between Gazprom and Fortum led to the foundation in 1994 of the Gasum joint venture taking on itself gas imports and marketing as well as gas transmission network operation and development in Finland. At present, Gasum's authorized capital is divided in the following way: Gazprom (25%), Fortum (31%), the Finnish State (24%) and E.ON Ruhrgas AG (20%). In 1994, upon successful fulfillment of the first 20-year Contract commitments, the parties entered into a new through 31 December 2014 Agreement recently extended until year-end 2025. (Gazprom, 2005)

At the moment, Finland is an important trade partner of Russia. In 2011, Russia has retained the status of Finland's largest trading partner. According to the Trade Representation of Russia in Finland in 2011, the share of fuel and energy sources in the structure of Russian exports to Finland was 82.9% (including 63.3% - oil and petroleum products, 10.9% - natural gas, 4.4% - coal and coke, 4.4% - electricity). The share of non-ferrous metals is 1.7% of exports and 5.5% - chemical products and goods, 0.5% - ores and metal scrap, 2.6% - iron and steel, 3.2% - wood raw material. The share of machinery and equipment in Russian exports is 1.3%. The major items of Russian import from Finland in 2011 were: machinery, equipment and vehicles - 35.4%, chemical products and goods - 22.3% (including drugs - 8.8%), paper and carton - 9.2%, food products - 6.9%. (The Trade Representation of the Russian Federation in Finland, 2012 <http://www.rusfintrade.ru/>).

Foreign economic relations of the North-West Federal District with the EU and other regions of the world develop not only in the form of exports and imports, but also in the form of joint ventures, establishment of special economic zones, the development of production with use of Russian and Western innovation technologies. (Ministry of Region Development, 2011. The strategy of socio-economic development of the North-West Federal District – 2020.

http://www.minregion.ru/activities/territorial_planning/strategy/federal_development/cfo_dev
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Within all the diversity of our interaction fields the most distinct perspective is seen for the joint initiatives in the spheres of energy and environmental technologies, forestry, transport and logistics fields, high-tech branches, productive cooperation in manufacturing high added value goods including electronics, communication facilities, food production for both - domestic markets and joint entry to other countries markets. (Valery Shlyamin, Trade

Representative of the Russian Federation in Finland, Doctor of economics «Place and role of the Russian-Finnish economic cooperation in the Baltic Sea region»)

Energy is one of the key sectors of the Russian economy. Traditional, historically the most significant industry is the fuel energy. The country has significant reserves of energy resources and the potential of renewable energy sources, it is one of the ten richest energy states in the world. About 2/3 of Russia's exports are oil, gas and petroleum products, but it is often low-processed products.

However, the Russian energy industry is highly competitive. Nowadays, its impact on many related industries increases, especially increases the demand for high-tech products. Today, the Russian energy sector has considerable financial resource, scientific and technical potential, as well as all necessary conditions for accelerated and sustainable innovation evolution. Energy sector is able to take in technological borrowings successfully, join resources and new technologies, and to promote innovative modernization of the major part of processing and manufacturing industries.

At the same time, the manufacturing industries are developing in agreement with the current short-term interests of private companies, they are not aimed at decisions of long-term economic problems of the country. Enterprises with outdated equipment and technologies have no motivation to conduct large-scale renovation of production facilities and capacity building. In this case, a significant resources of technical and technological re-equipment, such as purchases of patents, licenses for innovative technology abroad or co-production of products with high added value with foreign companies is not used. As a result strengthening of raw material specialization takes place, and in the structure of exports remains low share of high technology products.

Due to the depletion of available resources and the need for its deep processing it is very important to carry out a modernization of processing facilities and exploit new capacities on the basis of borrowing and adoption of new technologies in the near future. It is necessary to create with government support a partnership between science and business.

One form of improving the competitiveness of the industry is clustering, including cross-border cooperation. Russian-Finnish energy cluster seems very possible. Finland uses the cluster approach in its economy for long time, it is a country with high competitiveness and great reputation in the field of research and development, and, by-turn, doesn't have its own energy resources, and satisfies demand for them completely with the help of Russian products, it is reliable trade partner for Russia.

In modern conditions, constraints of the cluster policy are administrative barriers, lack of labor market development and training, low entrepreneurship activity. Overcoming these barriers is only possible with the participation of the authorities at the federal, regional and municipal levels. Factors that form already created and intended to create clusters are low level of concentration of production in the industry, low competitiveness, the appearance or existence of the investment project, that will unit enterprises in the industry, and presence of investors and interested parties (government, business, society). (Ministry of Region Development, 2011. The strategy of socio-economic development of the North-West Federal District – 2020.

http://www.minregion.ru/upload/documents/2012/01/230112/230112_2074_r_str.pdf)

Complementary Resources and Needs of Companies in Traditional Energy Clusters of the Northwest Russia and Finland

<i>Northwest of Russia</i>	<i>Finland</i>
<ul style="list-style-type: none"> • Access to the most valuable natural resources, knowledge and experience in extraction, transportation and processing of these recourses; • Surplus capabilities in power generation, coupled with low costs of producing electric power; • Relatively inexpensive labor; • Very high competitiveness of certain materials, such as special steels; • The need to implement large-scale energy-saving programs; • Growing demand for high-quality industrial services in the energy field; • The need to resolve problems associated with energy companies' major contribution to environmental pollution; • The need to adapt to new management, marketing and innovation management technologies; • The need to explore new methods of operating in competitive energy market; • The need to achieve deeper oil refining 	<ul style="list-style-type: none"> • Demand for external power sources; • Demand for competitive solutions for the national energy sector and industries; • The need to cut costs; • Demand for competitive suppliers and contractors; • Knowledge and experience in implementing energy saving projects at both producers and consumers of power; • Knowledge and experience in managing and servicing electric power and heat generating facilities and networks; • Access to international sources of funding; • Knowledge and experience in international management, including innovation management, and marketing; • Knowledge and experience in refining sour crude Russian oil and development, production and distribution of high-grade oil products; • Knowledge and experience in the development of small-scale distributed

<p>and broaden the range of high-value-added oil products;</p> <ul style="list-style-type: none"> • Demand for technology and financial partners to implement large projects – both in the field of extraction of natural resources and in technological modernization 	<p>power solutions and systems;</p> <ul style="list-style-type: none"> • Competitive edge in the field of production of specialized energy equipment for different industries of industry; • Global-scale competitiveness of a number of critical technologies
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So it is clear that the countries have complementary resources, which is of great interest to energy companies and authorities of these countries. Scientific and technical cooperation, the need to expand into new markets, the favorable conditions for the establishment of a common energy market, common environmental interests - these factors also are pushing Russia and Finland to deepen cooperation in the energy sector and to create the cluster.

4. Cluster analysis (supply chains, access to resources, demand and supply)

Russia satisfies Finland needs of oil and gas. The share of fuel and energy sources in the structure of Russian exports to Finland was 82.9%. The major items of Russian import from Finland in 2011 were: machinery, equipment and vehicles, chemical products and goods, paper and carton, food products. (The Trade Representation of the Russian Federation in Finland, 2012 <http://www.rusfintrade.ru/>)

With one of the most common traditional energy source, oil, the access to the resources is only in Russia. As Finnish companies do not have any possibility to access any oil fields, they can only purchase the oil from Russian companies for example Gazprom or Lukoil. From the total consumption of energy in Finland, 68,2 % from this energy comes as imported energy from Russia and most of this is oil. (Statistic Finland, 2012a)

Finnish companies, for example Neste Oil, use mostly the Russian oil called Urals for producing gasoline and diesel for cars and other types of products like petrochemicals. (Neste Oil, 2011)

Finland and Russia has signed an agreement where they will research methods to use energy more efficiently. (Ministry of employment and the economy, 2012)

Today, the Russian energy sector has considerable financial resource, scientific and technical potential, as well as all necessary conditions for accelerated and sustainable

innovation evolution. Energy sector is able to take in technological borrowings successfully, join resources and new technologies, and to promote innovative modernization of the major part of processing and manufacturing industries.

The main function of the North-West Federal District of the Russian Federation is providing external economic relations between Russia and the European Union. Favorable geographical position and access to the sea promote the development of international relations. One of the main advantages of the geographical location of the Leningrad region and St. Petersburg is its closeness to one of the world's major markets - the European market. (RIA-analyst, 2011. The socio-economic position of the North-West Federal District http://vid1.rian.ru/ig/ratings/Northwestern_FD.pdf)

The value of the North-West Federal District as a large prospective natural resource base is constantly growing. His role in the development of the Arctic territories adjacent to Russia, is recovering. North-West Federal District, and especially St. Petersburg - is one of the most important centers of scientific and technological progress and innovation development of the Russian economy.

So it is clear that the countries have complementary resources. They specialize in serving the needs of similar value systems, their advantages are concentrated at different links of a unified value system, and geographical proximity of clusters allows achieving agglomeration effects.

Russia can offer:

- Access to the most valuable natural resources, knowledge and experience in extraction, transportation and processing of these resources;
- Relatively inexpensive well-skilled labor force;
- Surplus capabilities in power generation, coupled with low costs of producing electric power;
- Very high competitiveness of certain materials, such as special steels;
- Demand for technology and financial partners to implement large projects – both in the field of extraction of natural resources and in technological modernization;
- Demand for high-quality industrial services in the energy field;
- The need to achieve deeper oil refining and broaden the range of high-value-added oil products.

Finland can offer:

- Knowledge and experience in managing and servicing electric power and heat generating facilities and networks;
- Knowledge and experience in refining sour crude Russian oil and development, production and distribution of high-grade oil products;
- Knowledge and experience in implementing energy saving projects at both producers and consumers of power;
- Access to international sources of funding;
- Demand for external power sources;
- Demand for competitive suppliers and contractors;
- Demand for competitive solutions for the national energy sector and industries;
- The need to cut costs.

What Finnish and Russian companies could do as a cluster is to do more collaboration so that they could enter the international markets in Europe as well. Also it would bring up more opportunities for new innovations for the energy production industry.

5. Creation of the cluster map

The energy sector of the Northwest Russia is a powerful complex consisting primarily of Russian firms specialising in the extraction and processing of hydrocarbons, electric power production and distribution and power engineering. Many leading companies export their products, however these exports are either made up mostly of raw oil and gas or of low-processed mineral oils, or, have weak competitive positions in the largest and most solvent markets of developed countries.

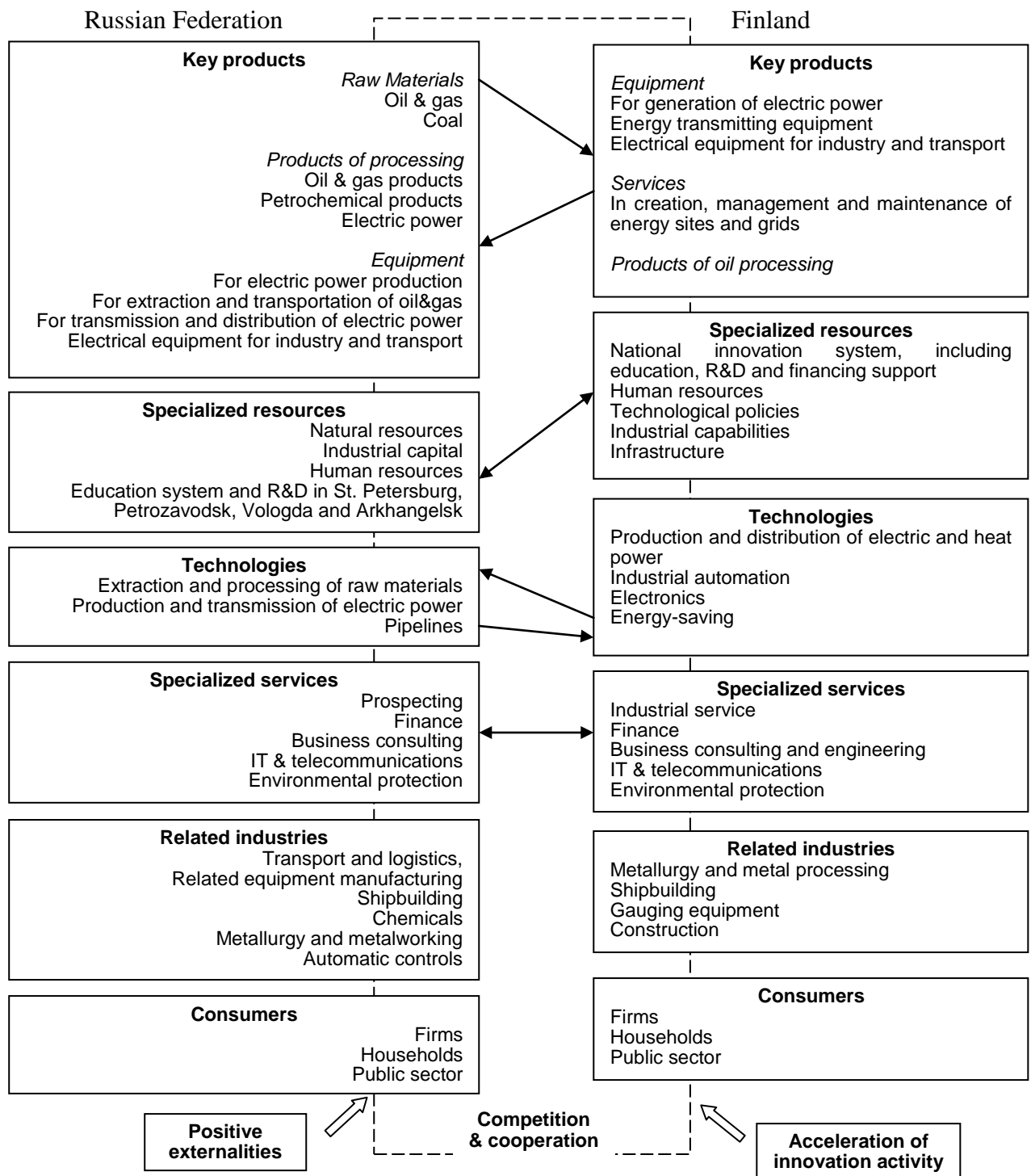
Factors that form already created and intended to create clusters are low level of concentration of production in the industry, low competitiveness, the appearance or existence of the investment project, that will unit enterprises in the industry, and presence of investors and interested parties (government, business, society). (Ministry of Region Development, 2011. The strategy of socio-economic development of the North-West Federal District – 2020. http://www.minregion.ru/upload/documents/2012/01/230112/230112_2074_r_str.pdf)

A gradual improvement of investment climate in Russia is an important factor. It is expected to facilitating higher competition, growing domestic and foreign investments in the sector and a broadening of international cooperation, which are all necessary prerequisites to

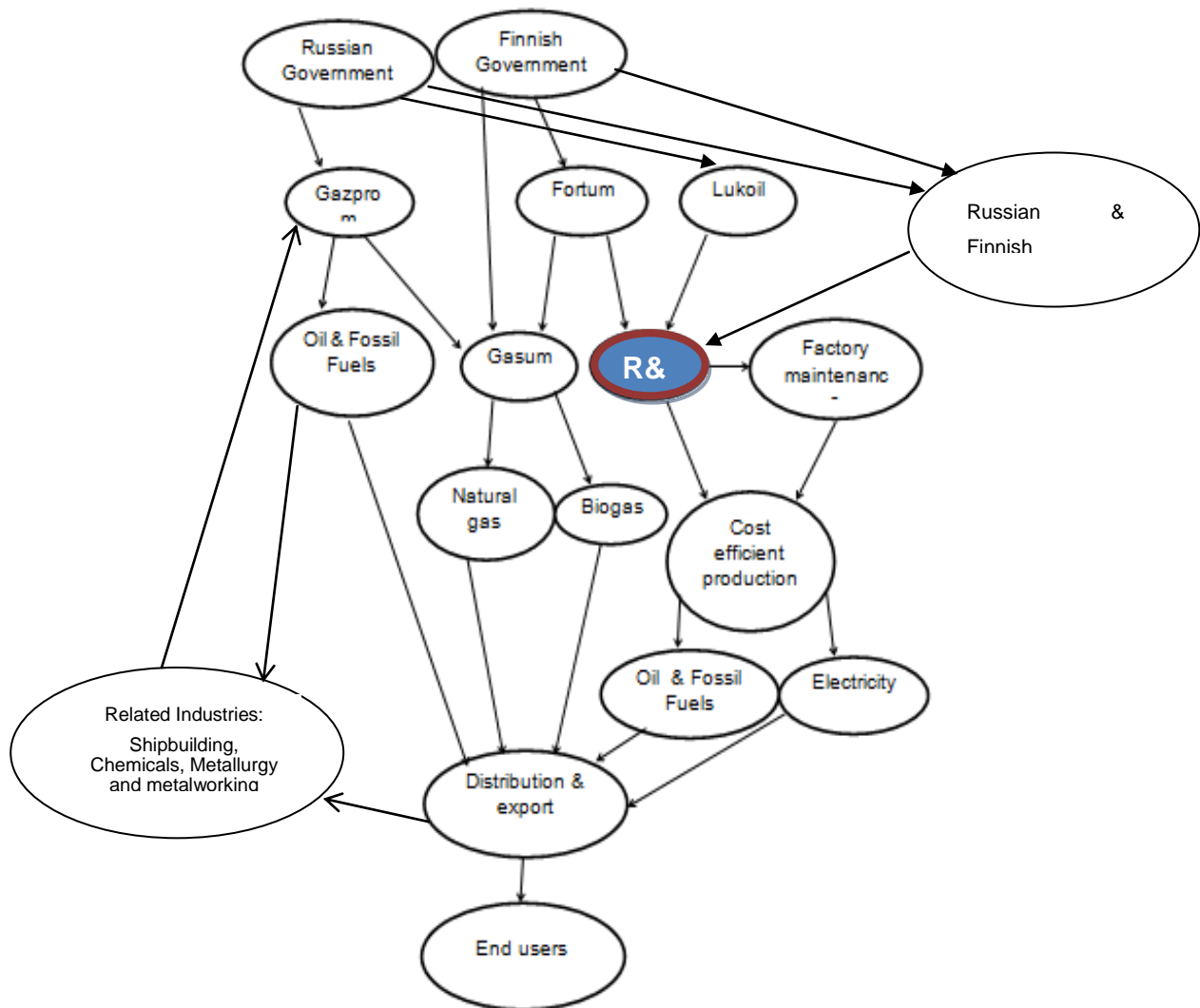
boosting the competitive strength of the cluster as a whole. The energy cluster of the Northwest should be classified as one in transition from potential to latent: many elements of value system are involved in the cluster, although not all of them are equally developed. The cluster lacks a clearly defined strategy for its key players, as well as self-identity, which are both needed if it is to gain any substantial advantages from the clusterization.

The energy cluster of Finland consists of a number of large and a host of small- and medium-sized firms that belong both to Finnish and foreign investors, including those that are a part of large multinational corporations. Since Finland has no hydrocarbon resources of its own, it relies entirely on supplies of hydrocarbons from abroad, mainly from Russia. This is why the energy sector of Finland combines primary engineering and servicing companies specializing in the production of power equipment and technologies, creation and maintenance of energy sites and grids, as well as oil processing. The majority of these companies successfully export their products and services, being competitive world market players.

The most important advantages of the Finnish cluster are its efficient innovation system, the mature development strategies of key companies, high levels of internationalization and active inter-industry cooperation. At the same time high production costs, narrow home markets and niche nature of traditional competences encourage companies to develop partnership networks in countries with low cost levels and to move closer to end-customer, i.e. establish affiliated companies in the countries consuming products and services, as well as strengthen cooperation in R&D. The energy cluster of Finland can be classified as a transition type between latent and working. Despite the relatively fragmented structure of the cluster, which prevents it from reaping high awards from clusterization, its confident self-identification and a healthy balance between competition and cooperation allow companies in this cluster to identify and create synergies, which form an essential element of their international competitive strength.



For example,

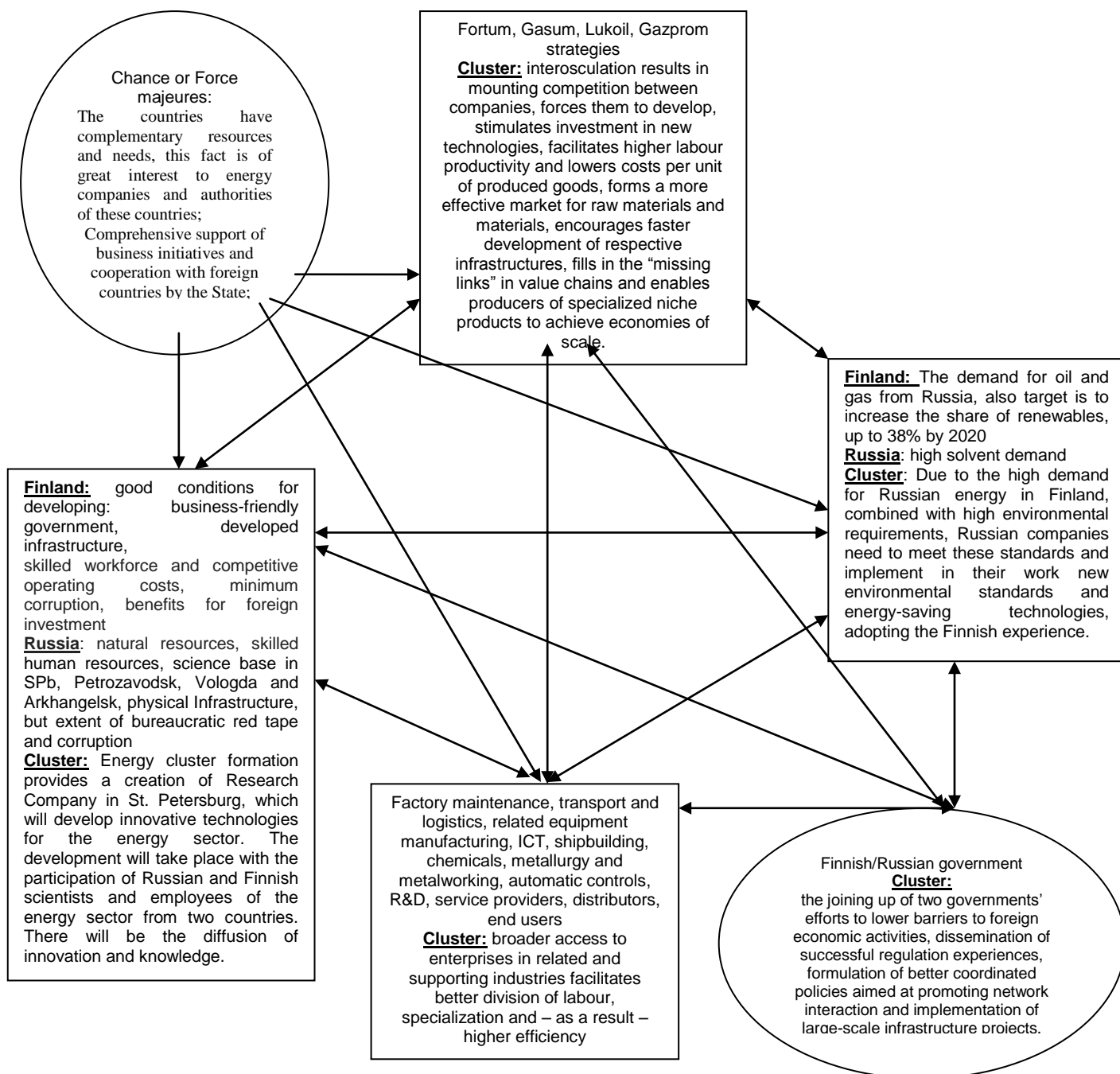


Energy cluster formation provides a creation of R&D Company in St. Petersburg, which will develop innovative technologies for the energy sector. The development will take place with the participation of Russian and Finnish scientists and employees of the energy sector from two countries. There will be the diffusion of innovation and knowledge. R&D is the core of the cluster.

There will be a scientific basis for innovation and development in the energy sector, as well as an open platform for discussion of the Finnish and Russian sides, which will include companies, scientists, workers, executives of energy companies, and the governments of the two countries.

Moreover, cooperation between representatives of various corporate cultures leads to the accumulation of knowledge about best practices in designing corporate strategies, building management and personnel motivation systems, etc., while successful experience helps to forge international links and increases the investment attractiveness.

6. Cluster diamond model



Factors: mutual penetration facilitates better access to infrastructure, natural resources and available science and research potential, helps to integrate workforce markets and broaden the knowledge about capabilities of cluster participants.

Energy cluster formation provides a creation of Research Company in St. Petersburg, which will develop innovative technologies for the energy sector. The development will take place with the participation of Russian and Finnish scientists and employees of the energy sector from two countries. There will be the diffusion of innovation and knowledge.

Demand: interaction introduces new standards of quality and service, forges new types of links between consumers and producers, helps to create demand for new specific combinations of goods and services and provides more possibilities for participants of cooperation to access the international market.

Due to the high demand for Russian energy in Finland, combined with high environmental requirements, Russian companies need to meet these standards and implement in their work new environmental standards and energy-saving technologies, adopting the Finnish experience.

Company's Structure, Strategy and Rivalry: interosculation results in mounting competition between companies, forces them to develop, stimulates investment in new technologies, facilitates higher labour productivity and lowers costs per unit of produced goods, forms a more effective market for raw materials and materials, encourages faster development of respective infrastructures, fills in the "missing links" in value chains and enables producers of specialized niche products to achieve economies of scale. Cooperation between representatives of various corporate cultures leads to the accumulation of knowledge about best practices in designing corporate strategies, building management and personnel motivation systems, etc., while successful experience helps to forge international links and increases the investment attractiveness.

Related and Supporting Industries: broader access to enterprises in related and supporting industries facilitates better division of labour, specialization and – as a result – higher efficiency, makes for the production of more complex goods and helps to organize more efficient post-sales services, while increasing competition in related industries contributes to lowering cost price in key enterprises of the clusters.

Government: The most obvious consequences of clusters' mutual inter-permeation is the joining up of two governments' efforts to lower barriers to foreign economic activities, dissemination of successful regulation experiences, formulation of better coordinated policies aimed at promoting network interaction and implementation of large-scale infrastructure projects. All this leads to lower costs of both future and current projects and can lay the foundation for a qualitatively new page in the clusters' development.

International Business Activity: mutual permeation resulting in the integration of the four main blocks of the “diamond” facilitates substantial increase in the investment attractiveness, since under this model foreign firms get *access to “diamonds” of both clusters at once*. This in turn leads to regional companies acquiring higher value, the possibility of foreign funding with lower costs, and finally, to existing foreign companies expanding their presence in the region/s. The broadening of cooperation between clusters facilitates a more active engagement of foreign firms in external economic activities, the growth of knowledge about foreign markets (including quality standards, distribution channels and marketing policies), as well as the strengthening of cluster positions in the international chains of value creation.

Conclusion

Summarizing all the above, following conclusions can be:

1. Finland is an advanced industrial economy with a thriving private sector and a business environment that is highly conducive to FDI. The government is business-friendly, and the country has a developed infrastructure, a skilled workforce and competitive operating costs. Red tape is minimal and Finland is one of the least corrupt countries in the world.
2. Russian Federation is not so competitive. It moves toward a more advanced stage of economic development, but its lack of business sophistication and low rates of technological adoption will become increasingly important challenges for its sustained progress. On the other hand, its high level of education enrollment, especially at the tertiary level; its fairly good infrastructure; and its large domestic market represent areas that can be leveraged to improve Russia’s competitiveness. However, the Russian energy industry is highly competitive.
3. The North-West Federal District makes a significant contribution of in the general economic potential of the Russian Federation. It is one of the most important centers of scientific and technological progress and innovation development of the Russian economy. And its value as a large prospective natural resource base is constantly growing. In the North-West Federal District there is a big share of elements of the economy with international specialization, including transport infrastructure, such as pipeline transportation, ports, terminals and customs infrastructure, objects of chemical industry, metallurgy and the timber industry. There is a growing international importance of oil and gas industry, shipbuilding, and tourism.

4. Finland has good conditions for developing: business-friendly government, developed infrastructure, skilled workforce and competitive operating costs, minimum corruption, benefits for foreign investment, but doesn't have its own oil & gas resources.

Russia has natural resources, skilled human resources, science base in SPb, Petrozavodsk, Vologda and Arkhangelsk, physical infrastructure, but extent of bureaucratic red tape and corruption, lack of business sophistication and low rates of technological adoption.

Scientific and technical cooperation, the need to expand into new markets, the favorable conditions for the establishment of a common energy market, common environmental interests - these factors also are pushing Russia and Finland to deepen cooperation in the energy sector and to create the cluster.

5. Opportunities for the traditional energy cluster to grow: good financing opportunities for companies, changing of the new technologies, innovations with the cluster companies, considerable financial resource, scientific and technical potential of Russian energy sector, as well as all necessary conditions for accelerated and sustainable innovation evolution, complementary resources and needs of Finland and Russia, this fact is of great interest to energy companies and authorities of these countries.

Constraints: taxes rates, access to financing, insufficient capacity to innovate, political risks, monopoly of importing gas in Finland (no competitiveness, Gasum determined the prices), administrative barriers, low entrepreneurship activity. Overcoming these barriers is only possible with the participation of the authorities at the federal, regional and municipal levels.

6. Key product of the Finnish side is technologies, for example technologies of oil refining and energy-saving. Key product of the Russian side is raw materials. Both parties have significant skilled human resources. Energy cluster formation provides a creation of R&D Company in St. Petersburg, which will develop innovative technologies for the energy sector with the participation of Russian and Finnish scientists and employees of the energy sector from two countries. R&D is the core of the cluster. It will be a scientific basis for innovation and development in the energy sector, as well as an open platform for discussion of the Finnish and Russian sides, which will include companies, scientists, employees, executives of energy companies, and the governments of the two countries.
7. Interosculation results in mounting competition between companies, forces them to develop, stimulates investment in new technologies, facilitates higher labour productivity and lowers costs per unit of produced goods, forms a more effective market for raw

materials and materials, encourages faster development of respective infrastructures, fills in the “missing links” in value chains and enables producers of specialized niche products to achieve economies of scale. Cooperation between representatives of various corporate cultures leads to the accumulation of knowledge about best practices in designing corporate strategies, building management and personnel motivation systems, etc., while successful experience helps to forge international links and increases the investment attractiveness.

8. Due to the high demand for Russian energy in Finland, combined with high environmental requirements, Russian companies need to meet these standards and implement in their work new environmental standards and energy-saving technologies, adopting the Finnish experience.
9. Broader access to enterprises in related and supporting industries facilitates better division of labor, specialization and – as a result – higher efficiency.
10. The most obvious consequences of clusters’ mutual inter-permeation is the joining up of two governments’ efforts to lower barriers to foreign economic activities, dissemination of successful regulation experiences, formulation of better coordinated policies aimed at promoting network interaction and implementation of large-scale infrastructure projects.

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CLUSTER PROJECT

ALTERNATIVE ENERGY: NORTHWEST REGION OF RUSSIA

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1) **Renewable energy in the world (includes the positive and negative of various energy sources)**

Alternative power engineering is a set of perspective ways of obtaining energy which are widespread not so widely as traditional, however are of interest because of advantage of their use at low risk of infliction of harm of ecology. Today alternative power engineering is perspective from the point of view of economic and power efficiency activity, despite active opposition of an oil and gas.

The solar energy

The solar power is transformation of solar energy to the electric power photo-electric and thermodynamic methods. Capacity of energy of the Sun makes 10 W that in 100 thousand times more level of power consumption of people of Earth at the end of the XX century. However the sunlight which is falling to the ground, possesses a number of characteristics: low density of a stream of energy, daily and seasonal recurrence, dependence on weather conditions. Therefore serious restrictions can make changes of thermal modes to system work. The similar system has to have the heat-sink device for an exception of casual fluctuations of modes of operation or ensuring necessary change of energy production in time. At projection of solar power stations it is necessary to estimate meteorological factors correctly. Advantages of solar energy is its ecological purity, noiselessness and a mild substitutability of waste plates, shortcomings — changeable output and need of the larger areas for installation of batteries (Babenko, K. 1998. Some manuals to mankind. No 7, 2694).

In the world at the beginning of the XXI century foreign Europe became the most perspective market of solar power (Grebennikov, M. 2009. Power and industry of Russia. No 19,135).

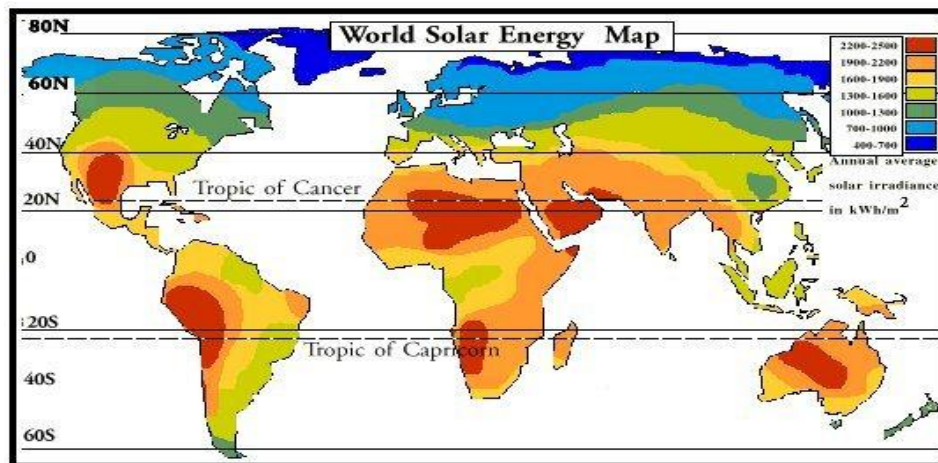


Fig.: World card of solar energy (Source: Solar Energy Disadvantages, available in www-pages <http://www.alternative-energy-resources.net/solarenergydisadvantages.html>).

Geothermal energy

Geothermal power – a way of receiving the electric power by transformation of internal heat of Earth (energy of hot steam-and-water springs) to electric energy. Geothermal sources are actually inexhaustible and possess high degree of predictability concerning

quantity of received energy. The cost of "fuel" of such power plant is defined by costs of productive wells and system of collecting steam and is rather low. The cost of the power plant is thus insignificant as it has no fire chamber, boiler installation and a flue. Possibility of local subsidence of soil belongs to shortcomings of geothermal electroinstallations and awakening of seismic activity. And gases leaving from under the earth can contain poison gas. Besides, certain geological conditions are necessary for construction of geothermal power plant. Now geothermal energy is used in 62 countries, the general capacity of the peace GEOES by 2007 achieved 19 300 MWt. Share of Russia in world production — 10%. Perspective from the point of view of use of geothermal energy of a place are located in Great Britain in Cornwall, East Yorkshire, Northern Ireland and Scotland. (Beliakov, A. & Orlov, A. & Golubovich, A. 2009. The alternative power engineering in Russia. Computerra).

Wind energy

Wind power is the branch of a power engineering specializing on use of wind power (a kinetic energy of air masses in the atmosphere). The most favorable sites for an arrangement of so-called wind-driven generators — constructions for wind power transformation — are on the earth coastlines (not less than 10 — 12 km from the coast), here are stronger a thermal gradient and more the strong and steady wind (not less than 5 m/s). Production of wind power plants very cheaply, but their capacity is small, and their work depends on weather, besides there is a problem of a changeable energy output (Babenko, V. 1998. Some manuals to mankind & round the world. No 7, 2694).

Besides they very noisy therefore large wind power plants even should be disconnected for the night. In addition, wind power plants create hindrances for air traffic, and even for radio waves. Application of wind power plants causes local weakening of force of the air streams, disturbing to airing of industrial regions and even influencing climate. At last, for use of wind power plants the huge areas, much more, than are necessary for other types of electric generators. But, it is possible to refer their ecological purity to pluses of wind generators, and also that that they don't need additional resources as other power sources and work from that that was given us by the nature – from wind power. Europe and China are buying wind turbines today (Beliakov, A. & Orlov, A. & Golubovich, A. 2009. The alternative power engineering in Russia. Computerra).. Meanwhile, the issue of noise, vibration, and many others have been resolved, resulting in a wind turbine in the mid-2000s, working in more than 50 countries(Source: History of a wind of a power engineering, available in www-pages RusHydro <http://www.rushydro.ru/industry/res/windpower/history>). On 1 January 2011 Spain became the world leader in wind energy (for the year 2010 on the WES was 43.0 GW, is 16.4% of the total electricity production in the country), pushing Germany into second place (respectively, 36.5 GW and 6,2%) (Source: Spain became the largest producer of wind energy in Europe, available in www-pages Rosbalt <http://www.rosbalt.ru/business/2011/04/13/839061.html>).

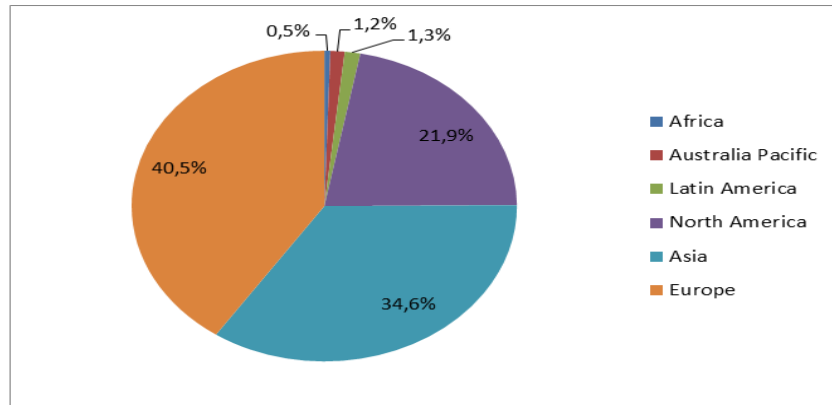


Fig.: Share from the world total power of wind stations on continents, 2011(Global Wind Energy Council, 2012).

Tidal energy

The tidal power engineering uses ocean and sea inflow and tides. The tidal power plants have on the coasts with the maximal differences of water lines during inflow and a tide. For the structure of the elementary tidal power plant the pool – the gulf blocked by a dam or a river ostium is necessary.

It is considered economically expedient construction of the tidal power plants in areas with the tidal fluctuations of level of the sea not less than 4 m. Design capacity of the tidal power plant depends on nature of inflow around station construction, on volume and the area of the tidal pool, on number of the turbines installed in a body of a dam. Lack of the tidal of power plant that they are under construction only on the bank of the seas and oceans, besides they develop not so larger capacity and inflow happen only two times per day. And even they ecologically are not safe. They break a normal exchange of salty and soft water and by that – living conditions of sea flora and fauna. They influence climate because change an energy potential of ocean waters, their speed and the movement territory. On economic indexes of Tidal power are comparable to river hydroelectric power stations (hydroelectric power station), it is 2,5 — 3,5 times more favorable than solar power stations, and is 10% more economic than nuclear power plants (nuclear power plant) (Leskov, C. 2007. Alternative energy sources: the chicken dung will go to a fire chamber even. News).

Thermonuclear energy

The thermonuclear power engineering of nuclear fusion representing in fact "energy production from water", has such indisputable advantages as inexhaustibility, ecological safety and economic efficiency. Temperature in the reactor will be maintained at the level of 150 million degrees (7,5 times higher, than in the Sun center). Results of the research experiments, whatever they were, scientists plan to receive by 2050 — 2060. Participants of the ITER project — the European Union, India, China, Russia, the USA, South Korea and Japan. Brazil, Canada, Mexico, Kazakhstan and Ukraine would like to join them. The tentative cost of construction made \$10 billion, in 2011 it increased to \$15 billion, and, most likely, will grow further. Not all participating states can reconcile with this fact, but experts consider body height of expenses for ITER inevitable (Source: Independent electronic periodical AtomInfo.ru, available in www-pages of http://www.atominfo.ru/archive_iter.htm).

Biomass energy

Biomass power engineering. When rotting biomass (the dung, the died organisms, plants) is allocated biogas with the high maintenance of a methane which is used for heating, electric power development and so forth. There are enterprises (pigsties and cowsheds, etc.) which provide itself with the electric power and heat because have some larger "tubs" where dump larger masses of a dung from animals. One more advantage of this type of a power engineering is that as a result of use of the wet dung for obtaining energy, from a dung there is a solids content. It is fine fertilizer for fields. Also as biofuel fast-growing algas and some types of an organic wastage (stalks of corn, a reed and so forth) can be used.

Memory effect

The memory effect is observed in special alloys and is that details from them restore after deformation the initial form at thermal influence. At restitution of a tentative form the work considerably surpassing those which was spent for cold deformation can be made. Thus, at restitution of a tentative form alloys develop a significant amount of heat (energy). The main lack of effect of restitution of a form is the low efficiency – only 5-6 percent therefore it is a little used.

Problems in the field of energy and disadvantages of alternative energy

Questions of ecology and energy security everything influence our life more strongly. The modern most used sources of the electric power it gidro-, warm and nuclear power plants. It generates a number of problems:

- Increasing environmental pollution
- Deficiency of energy and limitation of fuel resources
- Increase in the content of greenhouse gases and violation of thermal balance of the atmosphere that gradually bring to global climate change
- Steady tendency of rise in price of energy
- Recycling of nuclear power (it is necessary to allocate separately from environmental problems as has special value)
- Increase in accidents and ecologically adverse emissions

All these problems with accruing sharpness show inevitability of transition to nonconventional, to alternative energy sources (Sokolov, E & Panarin, V & Zuikova, A. 2010. Modern problems of science in the field of environmental protection. Tula State University).

There are some main shortcomings which constrain world distribution of renewable energy:

- need of the big areas for power plants and fields for raw materials cultivation for biofuel (except the Russian Federation);
- instability of power streams;

- it is difficult to regulate system under needs of the consumer
- Rather high cost of installations;
- need of replacement of engineering and electric networks;
- difficulties of legislative regulation (Glaser, O & Tishkov, A. 2012. Challenges of the XXI Century: Nature, Society and Space. Respond of Geographers of CIS).

2) **Projections for renewable energy**

Experts of the international venture fund I2BF (Source: I2BF Holdings International venture fund, available in www-pages of <http://www.i2bf.com/>) submitted the first review of the market of renewable power. According to their forecasts, in 5–10 years of technology of alternative power engineering become more competitive and will gain mass distribution. Already now the gap in the cost of alternative and traditional energy is quickly reduced. The cost of energy is meant as the price which the producer of alternative energy that during life of the project to compensate the capital expenses wants to receive and to provide profitability in 10% for the invested capital. The cost of debt financing also will be included in this price, as the majority by an inclination of the serious lever of borrowed funds (Germanovich, V & Turilin, A. 2011. Alternative energy sources. Practical designs on use of wind power, the sun, water, the earth, a biomass, Science and Technique).

This schedule illustrates an assessment of different types of an alternative power and traditional engineering in the II quarter 2011. On the specified figures the lowest cost from all types of alternative power engineering geothermal energy, and also the energy which is forming at burning of garbage and rubbishy gas possesses. In fact, they already can compete directly with traditional power, but as a limiting factor for them the limited quantity of places where it is possible to realize these projects serves. According to experts of I2BF also wind energy shows quite quite good prime cost. It should be noted that for the last year quite strongly, for 10-15%, wind turbines fell in price, but growth of cost of financing completely leveled this achievement and even led to small rise in price of wind energy. As soon as the economy debt financing will fall in price, it is possible to expect falling of cost of wind energy approximately for the same 10-15%.

The similar situation was observed and in geothermal power where the cost of drilling operations significantly fell in price that was completely leveled by a rise in price of borrowed funds. Though solar energy looks still very expensive, in this sector of alternative power engineering there was the most serious break for the last half a year. Since 2004 in the market of solar power demand constantly exceeded the offer thanks to high tariffs for solar energy in Spain and Germany. It adjusted the prices of solar modules and led to essential increase in production of solar batteries. At the end of 2008 the situation changed – the offer exceeded demand that led to depreciation of silicon modules practically twice. Essential progress achieved also in the field of thin-film technologies which at prime cost of energy long time went together with silicon modules, but by results of the II quarter 2009 were nearly 30% cheaper than them. So serious progress of solar power, and also competitiveness of some types of alternative power engineering even in the conditions of the high cost of credit financing allows to look into the future of this sector of economy with optimism and to predict its essential growth in long-term prospect. (Source: I2BF: alternative energy cheaper available in site AEnergy Company <http://aenergy.ru/1937>)

3) Industry analysis

Russia

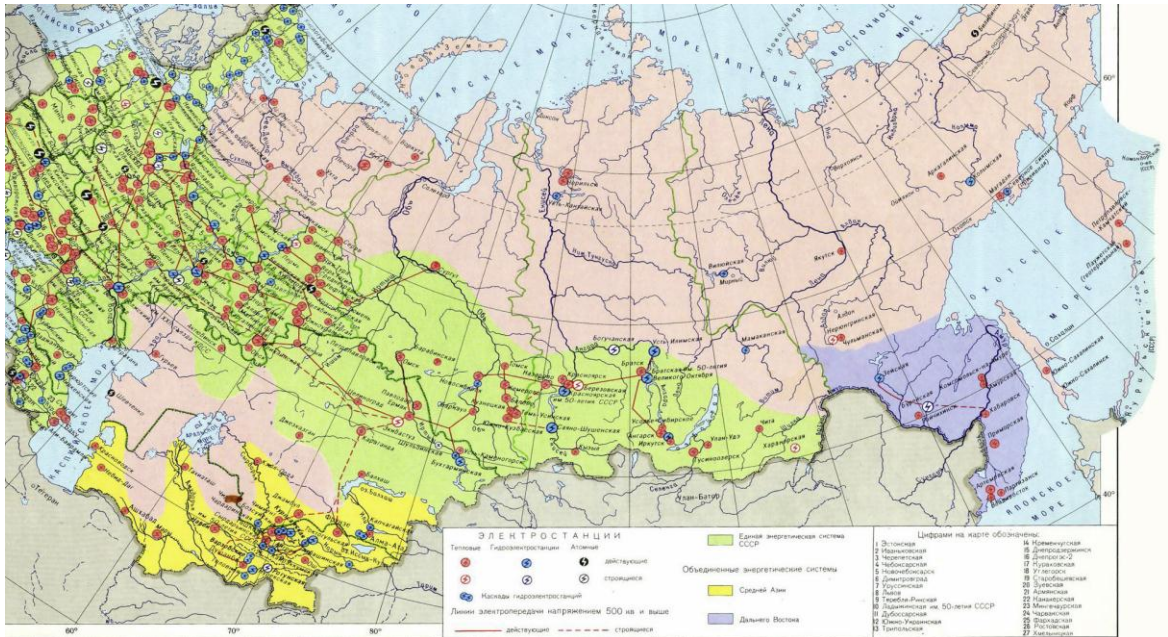
Renewable energy in Russia mainly consists of hydroelectric energy. The country is the fifth largest producer of renewable energy in the world, although it is 56th when hydroelectric energy is not taken into account (Trevor, S. 2010. Russia- Russian Wind Power. Industry News. Retrieved). Some 179 TWh of Russia's energy production comes from renewable energy sources, out of a total economically feasible potential of 1823 TWh (Raili, K. 2008. NEFCO Renewable Energy Projects in Russia. NEFCO Retrieved). 16% of Russia's electricity is generated from hydropower, and less than 1% is generated from all other renewable energy sources combined. Roughly 68% of Russia's electricity is generated from thermal power and 16% from nuclear power (Russia-Electricity. U.S. Energy Information Administration. 2010).

While most of the large hydropower plants in Russia date from the Soviet era, the abundance of fossil fuels in the Soviet Union and the Russian Federation has resulted in little need for the development of other renewable energy sources. There are currently plans to develop all types of renewable energy, which is strongly encouraged by the Russian government (Kostomarova, A & Blake J. 2009. Russian renewable energy prepares for a bigger slice of the power pie. Business RT). Russian President Dmitry Medvedev has called for renewable energy to have a larger share of Russia's energy output, and has taken steps to promote the development of renewable energy in Russia since 2008 (Klementiev, M. 2010. Medvedev orders incentives for renewable energy use. RIA Novosti).

Russia is one of the world's largest producers of energy, most of which it obtains from oil, natural gas and coal. The country's focus on those resources for production and export, which constitute 80% of foreign trade earnings, means it has paid little attention to renewable energy. Out of the 203 GW of electric generation capacity that Russia has, 44 GW comes from hydroelectricity, 307 MW from geothermal, 15 MW from wind and negligible amounts from other renewable sources (Source: Survey of Energy Resources. 2007. World Energy Council 2007). In 2009, the Russian energy industry generated a total 992 TWh of electricity, 176 TWh of which was produced by hydroelectric power stations. Some of Russia's hydroelectric power plants are outdated and are in need of additional investment, as shown by the accident at the Sayano-Shushenskaya HPP in 2009.

Dmitry Medvedev announced in May 2010 that the Russian government would strongly consider purchasing electricity generated from renewable energy sources in an attempt to encourage development of renewable energy. The government has plans for 4.5% of Russia's energy output to come from non-hydroelectric renewable energy sources. Additionally, in November 2010, the government approved a US\$300 billion program to make factories and buildings more energy efficient; it also announced plans to construct eight energy-efficient lamp production plants, promote recycling and support the construction of a hybrid car plant. Medvedev announced in late 2009 that he wanted to cut Russian energy consumption by 40% by 2020 (Amstell, D. 2009. Russian Energy efficiency: Medvedev's new favourite topic?. PE Power & Energy). (Morarjee, R. 2010. Red to green: Russia begins energy saving. Business New Europe). At the moment, development is slowed by low investment, economic instability, low public demand and low tariffs on heat and electricity. Subsidies for natural gas are another obstacle to renewable energy development (Overland, I

& Kjaernet, H. 2009. Russian Renewable Energy – The Potential for International Cooperation. Ashgate Publishing).



Unified Energy System of Russia (Skorlygin, V. & Chernega, S. & Makolkin, D. & Lähteenmäki, H. 2012. FinPro Smart Grids – Finnish-Russian Technology Platform Report).

Russia possessing the considerable stocks of nonconventional fuel and having possibility of use one (and sometimes two and more) renewables in each region (Bezrukih, P. 2006. Without renewable energy never enough. Independent Newspaper), did not hurry with development of the alternative power engineering up to the 2000th years though separate researches and development in this direction were actively conducted with 1950 — the 1960th years.

In comparison with the USA and EU countries use of renewables is in Russia at a low level. Current situation can be explained with availability of traditional fossil power supplies, and also weak concern in an ecological situation in the country of the authorities, business and the population. One of the main barriers to construction of large power plants on renewable energy – lack of provision on a stimulating tariff on which the state would buy the electric power made on the basis of renewable energy (feed-in tariff). The low level of development of renewables in Russia is connected with characteristic features of economy — low technological level and the extremely wasteful way of life of the population and business. As a result — high power — and a resursozatrastnost. Among other reasons it is possible to call shortcomings of renewable energy and too small interest of the authorities to an ecological situation of the country. But Russia has necessary natural resources for development of alternative energy sources. By available estimates, the potential of renewables in Russia makes about 4,6 billion tce a year, that is exceeds the volume of consumption of all fuel and energy resources of Russia five times.

Certainly, the most significant for Russia from the point of view of their industrial application are the biomass, wind power and the sun. All this could allow Russia to reach leading position in the world on use of renewable energy and to satisfy inquiries of the country in energy to 80%.

Wind power

As of the beginning of 2010 total rated capacity of wind installations in Russia made 18 MWt. In four years this indicator grew only by 4 MWt. Wind installations make only 0,008% of electrogenerating objects in Russia (220 GW). The wind power fund consists of 1 600 small installations with power from 0,1 to 30 kW and 10 large wind farms providing 90% for total power. The largest parks: Kulikovsky (Kaliningrad region, 5,4 MWt), Chukchi wind power plant (Republic Chukotka, 2,5 MWt), Tyupkilda's wind power plant (Republic of Bashkortostan, 2,2 MWt). Rated capacity use at the listed stations doesn't exceed 12,5%. Now private initiators presented a number of the 100 MWt investment projects and more. In the country more than 20 producers of wind installations are, but all of them work in a segment of small and average generators – no more than 500 kW.

Foreign experience of creation of objects of wind power shows that is economically expedient to build wind power plants where wind speed a majority of year not less than 5 m/s.



Fig.: The regions of Russia possessing the considerable wind resources

And the more the better – development of the electric power is proportional to a cube of speed of a wind: at increase it everything twice energy production increases by eight times.

Wind resources in Russia are concentrated along coastlines as exactly here because of difference of temperatures winds are rather strong and have steady character. Development ветроэнергетики is expedient in the region of the Far North, on the coast and islands of North and east Sea from Murmansk to Nakhodka, the Baltic, Black, Azov and Caspian seas and in some other places. In these areas are already established and not numerous domestic installations – in the item of Kulikovo (The Kaliningrad Region) – 5,1 MWt, the 2,5 MWt Anadyr VES function.



Fig.: Projected and winds under construction electro stations in Russia (Source: Promotional and informational magazine Electrotechnical market. 2010. Prospects of development of a renewable power engineering of Russia: branch section, 1-2 (31-32)).

Besides, wind generators can be operated in the northwest of the country (The Arkhangelsk and Kaliningrad Region, the Republic of Karelia), in the North Caucasus (The Astrakhan and Rostov Region, Krasnodar Krai, the Republic of Dagestan, the Republic of Kalmykia), in Siberia (Novosibirsk and Tyumen Region) and in the Far East (The Magadan and Sakhalin Region, Khabarovsk territory).

Energy of the sun

In the market of energy of the sun Russia acts as the exporter of raw materials and production. Lack of internal consumption is explained by that favorable levels of solar radiation in the country fall on rather poor regions: Southwest, Southern Siberia, Far East. As a result, for the beginning of 2010 the total capacity of the established photo-electric stations was estimated no more than at 1 MWt. Despite the lack of domestic market and weak prospects of its development, the Russian branch of solar power actively developed, being guided by the European market. Potential of solar energy in Russia (2,3 billion tce a year) is approximately twice higher than today's consumption of fuel.

The most "solar" areas – Primorye, the South of Siberia receive from 4,5 to the 5th kWh/day of sq.m that is more than in Germany (3,2 kW of h/day sq.m) and is quite comparable with Italy (6 kW of h/day sq.m). Other areas – Krasnodar Krai, the South of Yakutia, Eastern Siberia are comparable with the South of France and the central Italy. Thus, on "a solar resource" at least the part of our territory doesn't concede to leading consumers of solar energy. It means that in some remote areas it is simpler to establish "solar farms", than to pull power lines, to increase capacity and to puzzle over, where to take raw materials.



Fig.: Distribution of solar energy to territories of Russia

In the summer in a midland of the European part of Russia day efficiency of 1 sq.m of thermal collectors can reach 50-60 l of water with the temperature of 60-70 °C. As a result: It is expedient to Russia to build solar power stations in Primorye, in the south of Siberia, in Kuban, in Yakutia and Eastern Siberia (Beliakov, A & Orlov, A. & Golubovich, A. 2009. The alternative power engineering in Russia. Computerra).

Biomass

In Russia thanks to large forest supplies the production branch пеллет is well developed. Now in the country about 100 producers wood pellet are, and large productions – more than 300 thousand tons пеллет in a year recently are under construction. In 2009 release пеллет in the country made 700 thousand tons from which 619 thousand tons were sent for export. The main sales markets for the Russian production are the European countries where production on the basis of pellets develops: Sweden, Denmark, Belgium, Netherlands.

Wood and peat are the most widespread and available renewables from a biomass for the population of Russia. Russia has the huge potential of an excess biomass, especially in areas of the decentralized power supply which can be used as a cheap type of local fuel. Firewood now uses more than 5 million families, consuming over 50 million cubic meters of wood. Centrally fuel supply of the enterprise realize about 6 million cubic meters of firewood.



Fig.: Distribution of an excess biomass to territories of Russia

Common stocks of peat in the territory of Russia are estimated at 162,7 billion t (at humidity of 40%). Northern regions of the European part, Western Siberia, the Urals and the North West are most provided with peat resources. Stocks of peat can renew under the corresponding conditions. Annual increase of peat on bogs of Russia of 250 million tons. Stocks it only on developed fields allow to bring production volume to an equivalent of 7% of volume of annually consumed coal.

Thanks to low labor input and power consumption of production of fuel peat, simplicity of transport schemes and short distances of removal peat in a number of regions keeps competitiveness with other types of imported solid fuel. Besides, peat is characterized by the low content of sulfur and ashes that provides low level of harmful emissions at its combustion. In 2000 at power plants of Russia 1,7 million tons of peat were used.



Fig.: Geography of production of biofuel in Russia (Source: Promotional and informational magazine Electrotechnical market. 2010. Prospects of development of a renewable power engineering of Russia: branch section, No 1-2 (31-32) available in www-pages <http://market.elec.ru/nomer/29/perspektivy-razvitiya-vozbnovyajemoj-energetiki-r/>)

Economic calculations show that at the cost of 1300 rub over 1000 CBM of natural gas in regions with excess stocks of a biomass is profitable to pass to its use as fuel. So, for example, Karelia has the considerable resources of constantly renewable biomass in the form of wood plants, peat and an agriculture wastage which can be used in the power purposes. Peat stocks in Karelia are estimated at 2 billion t, resources of wood raw materials of deciduous breeds about 2 million m³/year. Only at the expense of use of peat and wood raw materials it is possible to reduce the volume of imported fuel by 60%.

Geothermal power engineering

In Russia use of geothermal sources also is rather perspective direction. Stocks of geothermal energy in Russia are extremely great, by estimates they at 10-15 time exceed stocks of organic fuel in the country. Practically in all territory of the country there are stocks of geothermal heat with temperatures in the range from 30 to 200oC (Source: Informational and analytical agency Cleandex, available in www-pages <http://www.cleandex.ru/articles/2008/06/23/geothermal-energy#.UMDqVhdpjbc>)

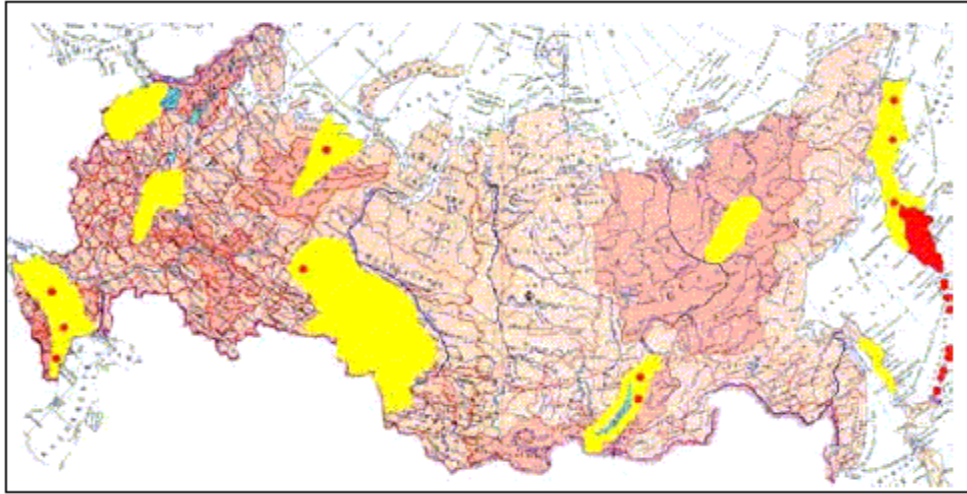


Рис.: Geothermal Energy Potential of USSR (World resources SIM Center, Geothermal Energy Potential of USSR. 2010).

For creation in Russia experts consider as perspective GEOES also Kuban, the Kaliningrad region and the North Caucasus.

Energy of inflow

According to the head of RJSC EEC Russia Anatoly Chubais, in the future the tidal power engineering will be able to provide to 25% of electricity generation in Russia. The most larger inflow in the territory of Russia are observed in the Sea of Okhotsk — in the Penzhina Bay to 17 meters, in Gizhiga Bay to 13 meters. In the Mezen Bay of the White Sea — to 10 meters. Inflow in Baltiysk and Black the seas are measured only by centimeters therefore construction of the tidal power plant here is inexpedient (Leskov, S. 2007. Alternative energy resources: the chicken dung will go to a fire chamber even. News).

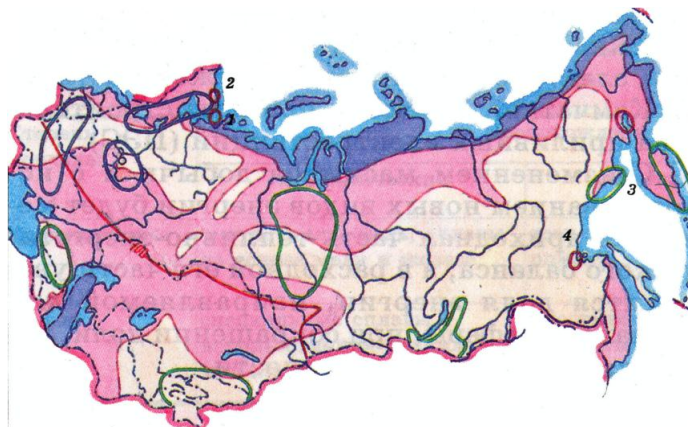


Fig.: Areas of possible use of the tidal energy

Bioethanol

As of the beginning of 2010 bioethanol and the biodiesel in Russia are not made due to the lack of the state support of branch. There are no subsidies to producers, standards of mixes of biofuel with gasoline and the solar oil, any target indexes of consumption. Bioethanol in Russia is equated to food alcohol, an excise on which above (30,5 rbl/l), than the price of gasoline of gas station. For the competitive biodiesel in the country few the olive

are grown up: colza and sunflower. Today Russia has a successful experience of creation of power plants practically on all known types of renewables. Problem is lack of actual state support of the alternate power productions, despite acceptance at the end the 2000th years of a number of fundamental resolutions and a course of the government on an innovation (Beliakov, A. & Orlov, A. & Golubovich, A. 2009. The alternative power engineering in Russia. Computerra)..

Other renewables

In the field of other renewables it should be noted JSC RusHydro projects in the field of small hydroelectric power stations. In JSC RusHydro the Russian hydroelectric power stations with a total power more than 25 GW are collected. The company also have the program in area ветроэнергетики. Russia possesses considerable potential in the field of tidal power. Total capacity of the projects of tidal power plants developed in Russia составит 100 GW. At the same time at a stage of close commercialization while there are only two projects with a total power less than 5 MWt. Projects in the field of heliothermal and wave power have separate character. Hydrogen power, despite a huge theoretical reserve as remains without commercial products.

Forecasts of further development of alternative energy sources in the Russian Federation

For foreign politicians and businessmen the renewable power became long ago one of the perspective directions promoting recovery from the crisis, the solution of the environmental and climatic problems caused by technological processes of obtaining energy from traditional fuel.

By 2020 the share of renewables in the total amount of the electric power developed in Russia has to be brought to 4,5%. According to the deputy director of department of energy efficiency and modernization of energy industry of the Ministry of Energy of the Russian Federation Alexey Kulapin, it is a task it is quite feasible. On implementation of regional programs of energy efficiency and energy saving in Russia in 2013 subsidies from the federal budget of 5,7 billion rubles are provided.

4) National competitiveness

General competition advantages and ratings

This chapter provides analytical statistics on several selected macroeconomic indicators the conditions for the development of clusters in Russia. The main source of information in compare is the analytics information of site heritage.com. (Source: Index of Economic freedom, <http://www.heritage.org/index/>) and PROSPERITY INDEX (Source: THE 2012 LEGATUM PROSPERITY INDEX, <http://www.prosperity.com/>).

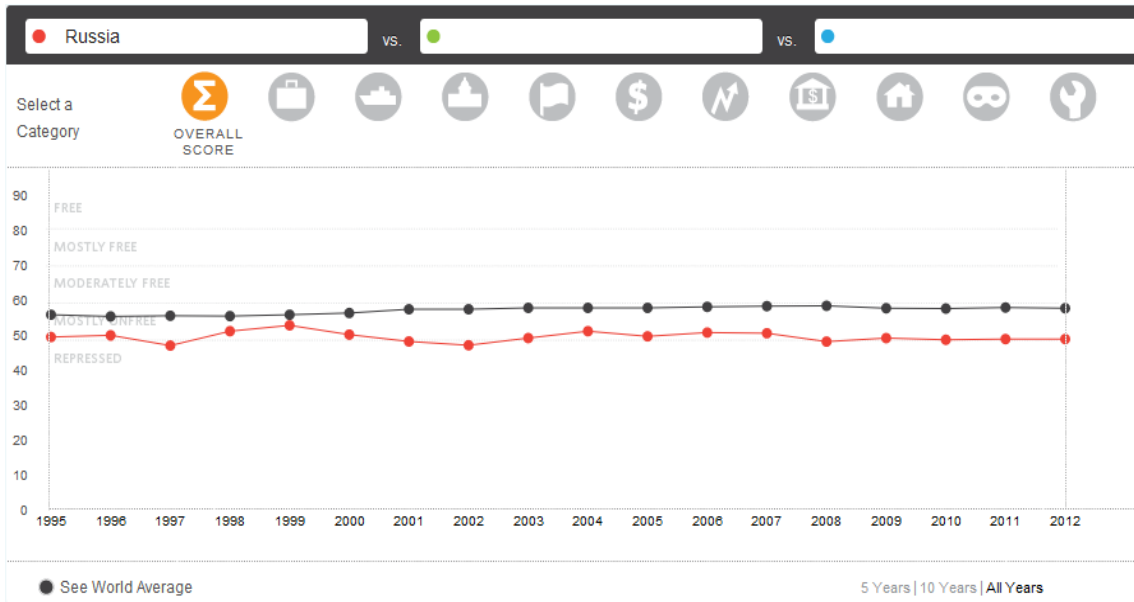
Russia



Russia's economic freedom score is 50.5, making its economy the 144th freest in the 2012 Index. Its score is unchanged from last year, with a significant increase in business freedom counterbalanced by a significant deterioration in control of government spending. Russia is ranked 41st out of 43 countries in the Europe region, and its overall score is below the world and regional averages.

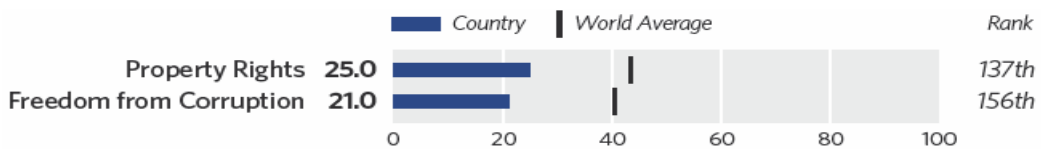
The Russian government has demonstrated little if any commitment to economic reform in recent years, and the country's economic freedom score remains stuck at the lower end of the "mostly unfree" category. While strong returns from hydrocarbons have buoyed the economy, prospects for sustained long-term growth and diversification remain dim. Pervasive corruption and limited respect for property rights undermine the rule of law, increasing uncertainty and investment risk.

Extensive state interference in the economy mutes private-sector dynamism. Layers of complex non-tariff barriers significantly increase the cost of trade. Deterrents to foreign direct investment include bureaucratic inconsistency and regulatory obscurity. The lack of market competition has inflated price levels. Public spending has been expanding, with little transparency or public accountability for expenditures. The budget has become increasingly dependent on oil prices.



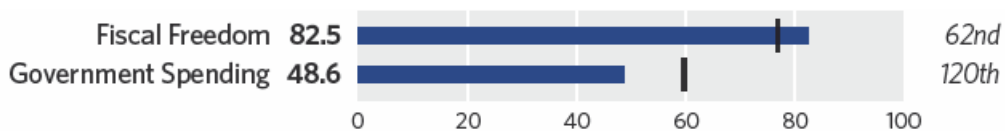
Background: Russia’s highly centralized government has tightened controls on civil society. The state has reasserted its dominant role in the extractive industries and depends heavily on exports of natural resources, especially hydrocarbons, for revenue. The global financial crisis, overregulation, pervasive corruption, and the war with Georgia sparked capital flight in 2008, and GDP contracted in 2009. The economy began to grow again in 2010, and high oil prices buoyed growth in 2011. Russia’s accession to the World Trade Organization, long delayed by issues of intellectual property rights, the rule of law, and resistance by Georgia, was moving forward at the end of 2011.

Rule of law



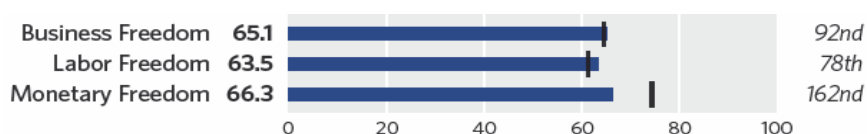
Russia’s legal framework is not up to the needs of a modern market economy. The rule of law is not strongly maintained across the country, and the judiciary is neither independent of political pressure nor consistent in applying the law. Protection of private property rights is weak, and contracts are not always secure. Infringements of intellectual property rights continue. Corruption remains a serious concern.

Limited government



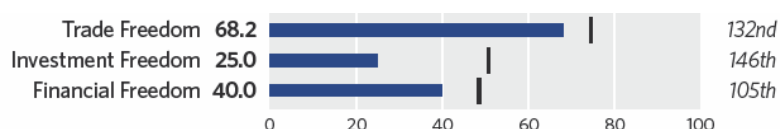
The income tax rate is a flat 13 percent, and the top corporate tax rate is 20 percent. Other taxes include a value-added tax (VAT) and an environmental tax, with the overall tax burden amounting to 34.4 percent of total domestic income. Government spending has increased to a level equivalent to 41 percent of GDP, turning the budget balance to deficit. Public debt has hovered at around 11 percent of total domestic output.

Regulatory efficiency



The business environment has improved only marginally, and regulations remain burdensome. Bureaucratic obstacles and inconsistent enforcement of regulations inject considerable uncertainty into entrepreneurial decision-making. The outmoded labor code continues to limit employment and productivity growth. The state influences prices through extensive subsidies and numerous state-owned enterprises.

Open markets.



The trade weighted average tariff rate is 5.9 percent, and layers of bureaucratic non-tariff barriers further distort the flow of goods and services. Except in the oil and gas sector, growth in foreign direct investment has been elusive due to the deficient investment framework. In mid-2011, regulators and the state-controlled VTB Group bailed out the Bank of Moscow with an injection of \$14.2 billion.

62	ECONOMY	Russia	Global Av.
	5 year growth rate (2010)	3.8%	2.7%
	Confidence in financial institutions?* (% yes) (2011)	41.1%	61.9%
	Satisfaction with living standards?* (% yes) (2011)	40.8%	59%
50	ENTREPRENEURSHIP & OPPORTUNITY		
	Business start-up costs (% of GNI) (2011)	2.0%	36.3%
	Mobile phones (per 100 ppl) (2011)	179.3	98.7
	Will working hard get you ahead?* (% yes) (2011)	56.4%	81.1%
118	GOVERNANCE		
	Confidence in the government?* (% yes) (2011)	56.4%	53.7%
	Confidence in the judiciary?* (% yes) (2011)	33.7%	52.5%
	Government effectiveness ¹ (2010)	-0.39	0.03
27	EDUCATION		
	Pupil to teacher ratio (2009)	18:1	25:1
	Satisfaction with education quality?* (% yes) (2011)	55.9%	66.6%
	Perception children are learning?* (% yes) (2011)	45.8%	70.4%

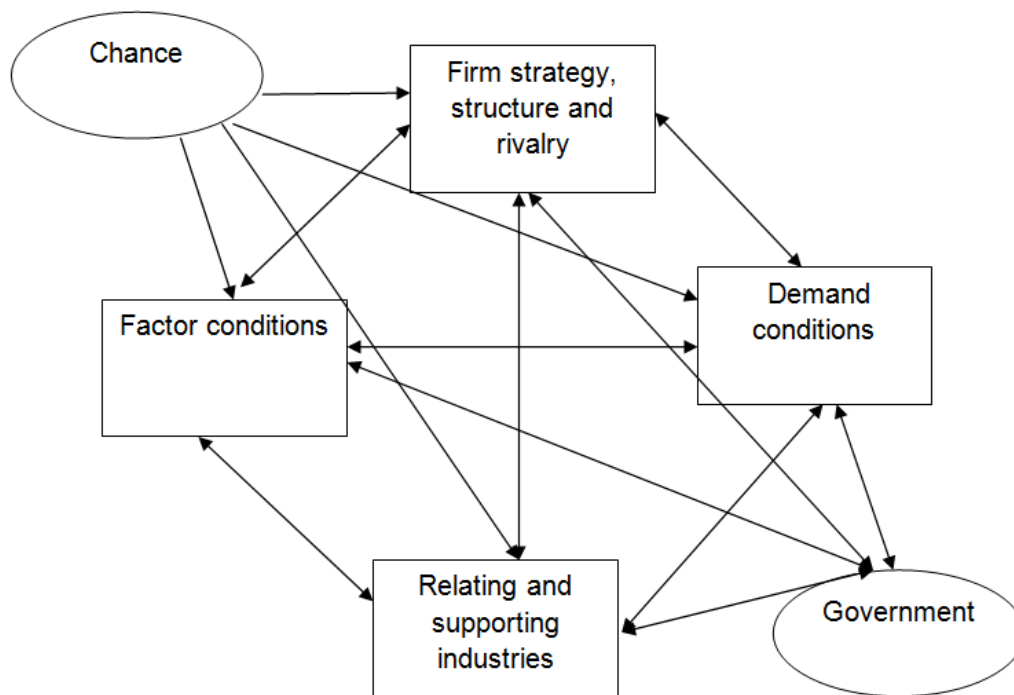
48	HEALTH	Russia	Global Av.
	Self-reported health problems?* (% yes) (2011)	35.6%	23.9%
	Hospital beds* (per 1000 people) (2006)	9.7	3.2
	Satisfaction with health?* (% yes) (2011)	59.2%	78.8%
97	SAFETY & SECURITY		
	Human flight ² (2011)	5.7	5.4
	Safe walking at night?* (% yes) (2011)	44.0%	61.9%
	Property stolen?* (% yes) (2011)	9.1%	16.8%
119	PERSONAL FREEDOM		
	Civil liberties ³ (2011)	3	4.8
	Tolerance for immigrants?* (% yes) (2011)	58.1%	65%
	Satisfaction with freedom of choice?* (% yes) (2011)	62.6%	73.4%
71	SOCIAL CAPITAL		
	Rely on others?* (% yes) (2011)	88.3%	80.6%
	Donations?* (% yes) (2011)	7.2%	28%
	Help strangers?* (% yes) (2011)	30.0%	45.7%

PROSPERITY INDEX: DATA IN FOCUS

5) Country diamond model by M. Porter

The diamond model is an economical model developed by Michael Porter in his book *The Competitive Advantage of Nations* (Porter, M. 1990. The competitive advantage of nations. New York), where he published his theory of why particular industries become competitive in particular locations (Traill, B. & Eamonn, P. 1998. *Competitiveness in the Food Industry*. Springer). In his model Porter distinguishes four internal and two external sources of competitiveness (M.Porter, 1990). Porter said, “The wealth of a nation is not

inherited, it is created.” The “Diamond of National Advantage” Model provides a framework to analyse the factors that determine a country’s competitiveness. The diagram below, summarizes the model.



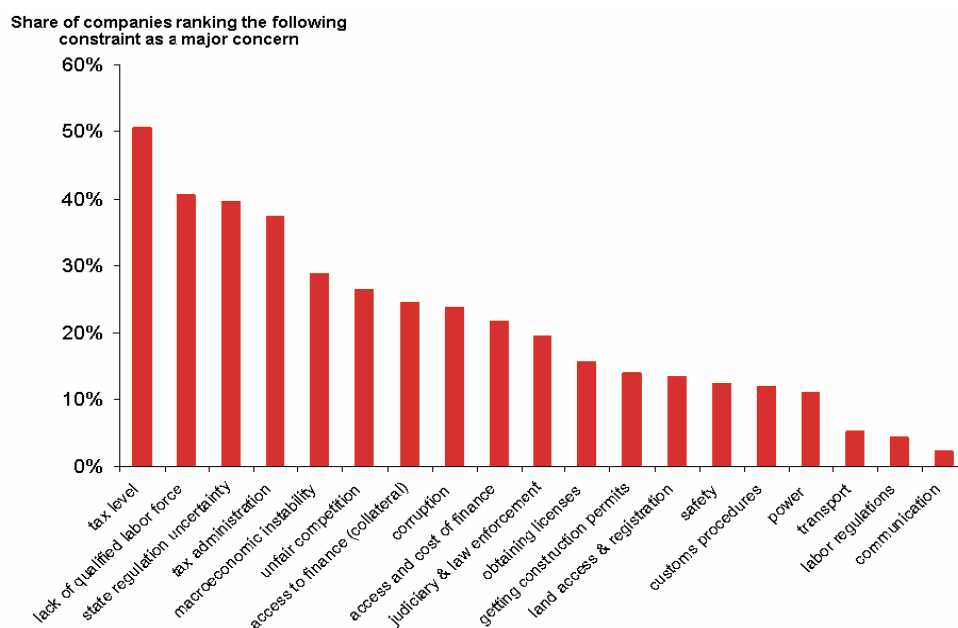
- Factor conditions are human resources, physical resources, knowledge resources, capital resources and infrastructure. Specialized resources are often specific for an industry and important for its competitiveness. Specific resources can be created to compensate for factor disadvantages.
- Demand conditions in the home market can help companies create a competitive advantage, when sophisticated home market buyers pressure firms to innovate faster and to create more advanced products than those of competitors.
- Related and supporting industries can produce inputs which are important for innovation and internationalization. These industries provide cost-effective inputs, but they also participate in the upgrading process, thus stimulating other companies in the chain to innovate.
- Firm strategy, structure and rivalry constitute the fourth determinant of competitiveness. The way in which companies are created, set goals and are managed is important for success. But the presence of intense rivalry in the home base is also important; it creates pressure to innovate in order to upgrade competitiveness.
- Government can influence each of the above four determinants of competitiveness. Clearly government can influence the supply conditions of key production factors, demand conditions in the home market, and competition between firms. Government interventions can occur at local, regional, national or supranational level.
- Chance events are occurrences that are outside of control of a firm. They are important because they create discontinuities in which some gain competitive positions and some lose.

6) Russia

In early 2006, the Center for Strategic Research (CSR) in Moscow commissioned Professor Michael Porter and his team to conduct a review of the existing evidence on Russian competitiveness. The objective of this report is to synthesize, interpret, and draw implications about Russia's economic progress, applying the Porter competitiveness This review is part of a Strategic Audit of the Russian Federation, a broader set of research activities coordinated by CSR to provide a sound analytical basis for longterm economic policy planning in the Russian Federation.² The Russian economy has been studied by numerous international organizations, academics, and other analysts. There are strongly divergent views about the state of Russian competitiveness. Strong economic growth, fiscal surpluses, and reforms in some areas of the business environment are juxtaposed with huge continuing challenges in doing business in Russia as well as rising government intervention in the market, especially in energy. This mixed evidence has been interpreted very differently. There is some truth in each of these perspectives, but a deeper analysis is needed to truly understand where Russia stands and to guide future policy (Kostin & Klein. 2007. Business leaders from the U.S. and Russia respectively, that make a similar observation).

- **Factor Conditions**

Factor conditions in Russia remain relatively strong, but are eroding with the exception of financial markets. Physical infrastructure is inefficient and not keeping pace with demands of a growing economy, particularly in high-growth regions like Moscow. Weak infrastructure also reduces the degree of effective local competition and cross-regional specialization within the Russian economy. Even where physical infrastructure is present, a lack of specialized service providers and efficient government services reduces productivity. This is evident in areas like logistics, where Russia has solid physical assets but much weaker service providers such as trade forwarders and other logistics companies (Sofizade & Hrehk & Pesotsky. 2006. According to industry experts, a significant share of Russian imports is shipped through non-Russian ports because of weaknesses in infrastructure, supporting services, and government inefficiency).



Source: Russia Investment Climate Survey, World Bank/HSE (2006)

Major Constraints to Competitiveness for Russian Companies, 2006 (Russia Investment Climate Survey, World Bank/HSE 2006).

Russia's financial sector is growing rapidly based on improved regulations and the increasing presence of foreign companies (IMF 2005). This is an area of policy success. However, the size of the financial sector remains limited for an economy in Russia's position. While large companies and recently consumers have access to loans and other sources of capital, small and medium size companies still find it hard to get financing. The financial sector also remains dominated by government-owned banks that have a virtually monopoly especially outside of Moscow and St. Petersburg. Foreign banks have increased their position in the Russian market and have not viewed government policies or the behavior of the state-owned banks as a problem (Banking regulation has been one of the problems that delayed the WTO agreement between Russia and the United States. U.S. banks saw the rules in question less as a problem than U.S. negotiators. OECD 2006, chapter 4). This is a positive sign. Nevertheless, Russia will need to develop a clear strategy for how to transition from a financial system dominated by few state-owned banks to a competitive, private sector system.

Factor conditions

Russian Competitiveness in 2006/07 Summary

The Positives	The Negatives
<ul style="list-style-type: none"> • Strong economic growth • Solid growth in GDP per capita • Strong fiscal position • Improved macroeconomic management • High labor utilization • Improving foreign direct investment inflows • Strengthening overall world export market shares • Foreign IPO's of Russian companies 	<ul style="list-style-type: none"> • Growth has been significantly driven by oil prices and the availability of idle production capacity in the economy • Deteriorating non-oil budget balance • Productivity level remains moderate • FDI inflows primarily related to accessing natural resources and (recently) serving local demand, not expanding exports • Export positions outside natural resources remain weak • Capital stock is aging • Financing constraints for domestic Russian companies • Patenting rates far below potential

(Porter, M & Ketels, C. 2007. Competitiveness at the Crossroads: Choosing the Future Direction of the Russian Economy).

- Context for Strategy and Rivalry

The rules and incentives governing competition are a key weakness in the Russian business environment. Government rules and regulations significantly raise the costs of doing business in Russia relative to peer countries, while limiting the intensity of competition. Overall, Russia ranks 106 among 178 countries in the World Bank's 2007 Doing Business report versus a 54th rank in GDP per capita World Bank (2007). Not only are costs high, but there is uncertainty about the predictability and application of rules and regulations. While there have been some policy improvements, implementation of reforms is often weak. There are also significant differences across Russian regions in the implementation of regulatory reforms Yakovlev/Zhuravskaya (2007). Russia's average tariff level is comparable to other countries at similar stages of development. However, the effective openness to foreign trade and investment is reduced by the complexity of tariff classes and the way they are interpreted by government authorities, both of which create uncertainty. This adds to the costs of

conducting cross-border business. Companies from the Baltic Sea Region report that technical rules create high barriers to trade with Russia that have slightly worsened over the last five years Henrik Isakson (2007). As a result of such administrative barriers and inadequate logistical services, Russia is less open to the global economy than, for example, China. Russia pays a high price in terms of domestic efficiency. The intensity of internal competition is low in large parts of the Russian economy, which is holding back restructuring, entrepreneurship, and innovation (Tshuklo. 2007. for the use of survey data to track the changes in competition until 2002). In many industries, there are dominant market positions in narrow regional and product markets. Regional concentration levels are high, and there is insufficient competition across regions (Christian Gianella/William Tompson. 2007). One reason for limited rivalry is artificial barriers to entry created by government, especially regional governments. Regional governments have been willing to protect or subsidize large employers in order to keep them afloat. New, more efficient companies find it hard to enter, and face competitors who set uneconomic prices based on marginal costs and fully written-off assets. Russian companies have higher prices and margins than in peer countries, despite some moderation in recent years. Higher margins reflect less contested market structures. While the surge in local demand led to some new entry, competition is often me-too competition based on price. Russian companies have been slow to develop differentiated products and services. Public policy towards competition has moved in the wrong direction. The Russian government has in the last two years taken a significantly more active and direct role in the economy. It has designated strategic sectors in which foreign ownership is limited. Government-owned companies like Gazprom and Rosneft have taken over the assets of private rivals, notably Yukos (Goldman. 2004. Scores of articles have followed the auctioning off of ex-Yukos assets, a process that has been regularly described as opaque), and gained a dominant position in their industries. The Russian government has facilitated the creation of national champions in areas like aerospace, where it has consolidated the industry in a single company under government control. Government has taken majority stakes in the dominant domestic players in sectors like the automotive industry. Proposals currently under discussion in the lower house of the Russian parliament, the Duma, could restrict the openness of a significant number of other industries to foreign investors. There is no evidence, in Russia or elsewhere, that national champions succeed and that these policies will enhance competitiveness or encourage new business formation or innovation. There is a need for structural change in many industries, but state ownership solutions have failed time and time again to produce real restructuring. While increasing the public ownership stake in natural resource industries may redress past exploitation to private domestic and foreign interests, the solution chosen by the Russian government has been, and will be, detrimental to the country's competitiveness. The government has mixed the roles of resource owner, regulator, and market participant, with predictable negative consequences. The path of Russian policy towards competition will limit Russia's participation in the global economy. Russia will find it increasingly hard to export outside of resources and commodities.

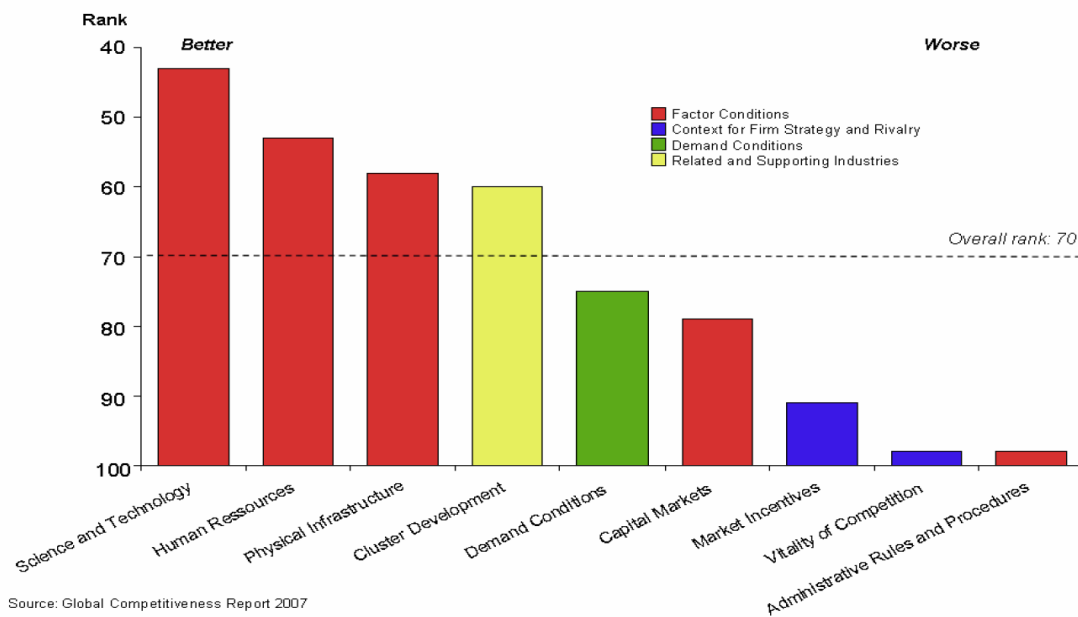
- Government

Government is taking steps to develop the Russian equity market by requiring Russian companies that list on foreign exchanges to also list on the Russian stock market. To attract growing interest from foreign and domestic investors, however, fiat will not be enough. It will be increasingly essential to continue the path towards strong and transparent regulation. This will put the Russian market in a better position to deal with the inevitable volatility of financial markets in an emerging economy. The government is also trying to improve the availability of risk capital through launching public venture funds. There is little evidence that a public dominated model will be successful, and public investment is rarely effective

unless it is invested jointly with private managers. The bulk of risk capital in Russia will need to come from private sources. Private risk capital funds are still small in Russia not because of lack of interest by the private sector, but because of inexperience and weaknesses in the business environment, especially regulation and bureaucracy. This is another area where attracting foreign expertise will provide immediate benefits to Russian competitiveness. Finally, the science and technology system in Russia has significant legacy strengths, but there is a real danger that these strengths will erode over time (OECD 2006, chapter 4). Overall, Russia has solid innovation inputs but weak outputs. Russia's research and development (R&D) spending as a share of GDP is high relative to its level of economic development, a legacy of past policies. A major share of this spending, however, is government spending on a large number of public research institutions with little connections to education and business. Government spending is biased toward personnel instead of modern research infrastructure. Companies still spend relatively little on R&D, content to grow with the domestic market. Academic research is not well integrated with Russian companies and with research internationally. Low levels of academic publications and patenting indicate that Russian researchers have not yet integrated into international science and technology networks. There are also problems with intellectual property protection, where science and technology suffers from the broader weaknesses in Russia's legal context and administrative systems.

- **Domestic Demand Conditions**

Demand sophistication and domestic segmentation are not yet important influences on Russian competitiveness. The recent increase of purchasing power has led to rising sophistication of Russian consumer demand. This is an important strength. It is likely that many Russian-based companies and subsidiaries are also starting to become more advanced in their purchasing activities. However, government procurement is not encouraging quality, and consumer-protection standards are weak. Government has also failed to set demanding regulations in environmental impact, safety, energy efficiency, and other areas as a tool to drive productivity and innovation.



Russia's Relative Business Environment Strengths and Weaknesses (Global Competitiveness Report 2007).

- **Related and Supporting Industries**

As a large country that historically was not well integrated into the world economy, Russia has a high presence of local suppliers and supporting industries. The evidence suggests, however, that such industries have rarely developed into functioning regional clusters that drive productivity and innovation.

- **Chance** is an unexpected event, or an opportunity that cannot be predicted.

The Porter thesis is that these factors interact with each other to create conditions where innovation and improved competitiveness occurs.

7) Pestle analysis

Russia

Political Factors

Current strengths	Current challenges
<ul style="list-style-type: none"> • Continuity in policies • International integration 	<ul style="list-style-type: none"> • Corruption and crime • Terrorism
Future prospects	Future risks
<ul style="list-style-type: none"> • Growing international relations 	<ul style="list-style-type: none"> • Pressure from bureaucracy

Economic analysis

Russia liberalized its economy in the 1990s and reaped huge benefits. The economy's successful run since 1999 came to an end in 2008 with the mounting economic crisis. During 1999–2007, the country had one of the highest growth rates, touching around 8% in 2007 but fell back to 6% in 2008. The global economic slowdown gripped the Russian economy too, and the economy went into recession with a negative rate of 8% in 2009. Large scale government expenditure and the devaluation of the ruble have posed fresh challenges to government finances and the balance of payments. The growth rate however is expected to recover to positive terms in 2010. The Russian economy continues to suffer setbacks in the form of low oil prices, a lower inflow of capital and tighter credit conditions coupled with bad corporate debt.

Current strengths	Current challenges
<ul style="list-style-type: none"> • Successful economic reforms • Strong current account surplus 	<ul style="list-style-type: none"> • Unemployment • Dependence on foreign money
Future prospects	Future risks
<ul style="list-style-type: none"> • Comfortable foreign exchange reserves • Growing foreign investments 	<ul style="list-style-type: none"> • Decreasing budget surplus • Adverse balance of payments

Social analysis

The social welfare system in Russia went through turmoil after the fall of the USSR. A weak healthcare system is one of the biggest challenges faced by Russia currently. Though the system is well decentralized in the country, it is inefficient, with under-qualified doctors and corrupt officials undermining the quality of treatment. Russia faces a severe demographic challenge resulting from low birth rates, poor medical care, and a rising AIDS problem. The human capital quality of Russia also compares unfavorably with other nations at the same level of development. Moreover, rising unemployment and poverty are still some of the challenges. Besides tackling the economic crisis, the government also needs to implement urgent measures to meet the challenges emerging from low birth rates and a shrinking working age population.

Current strengths	Current challenges
<ul style="list-style-type: none"> • Improvement in real income and wage levels • Educated population 	<ul style="list-style-type: none"> • High AIDS rate • High mortality rate
Future prospects	Future risks
<ul style="list-style-type: none"> • Revamp of social security benefits • National welfare fund • Tax benefits to healthcare and education 	<ul style="list-style-type: none"> • Widening income inequality and rising poverty • Increasing spread of the AIDS epidemic

Technological analysis

Russia has historically been known for its excellence in space technologies and is one of the most successful countries in terms of its implementation of many space programs. However, the country lacks expertise in fundamental research. Although Russia is part of the G8, the country does not have enough patents registered in its name. Furthermore, the science and technology system in Russia is weak, with a lack of proper resources and funding. Nevertheless, the country is beginning to position itself as the next destination for IT sector investments.

Current strengths	Current challenges
<ul style="list-style-type: none"> • Advanced space technologies 	<ul style="list-style-type: none"> • Poor performance on patents • Weak science and technology systems
Future prospects	Future risks
<ul style="list-style-type: none"> • Increasing presence of IT sector • Increasing number of skilled workers • Military technologies helping the farming sector 	<ul style="list-style-type: none"> • Piracy and poor infrastructure

Legal analysis

The Russian judicial system has suffered from corrupt officials and practices, which have made the system unreliable. In addition, unfair competition practices are hampering the entry of FDI into Russia. However, the country has set a long list of legal reforms during 2008, which are expected to improve the country's judicial system. Russia has also agreed to various legal assistance programs from many countries to solve its domestic and international legal issues.

Current strengths	Current challenges
<ul style="list-style-type: none"> ▪ Conducive FDI policies ▪ Easy immigration policy 	<ul style="list-style-type: none"> ▪ Weak judicial system ▪ Unfair competitive practices
Future prospects	Future risks
<ul style="list-style-type: none"> ▪ Judicial reforms ▪ International co-operation for legal assistance 	<ul style="list-style-type: none"> ▪ Slowdown of structural reforms

Environmental analysis

Although an environmental management system exists in Russia, a lack of resources to tackle environmental problems is preventing Russia from effectively implementing environmental protective measures. However, the government is planning to introduce an environmental security system to address this problem. The country has also agreed upon various international environmental agreements to take up conservation activities.

Current strengths	Current challenges
<ul style="list-style-type: none"> ▪ Environmental management systems 	<ul style="list-style-type: none"> ▪ Spillages causing environmental hazards ▪ Lack of resources to tackle environmental problems
Future prospects	Future risks
<ul style="list-style-type: none"> ▪ Environmental security system ▪ International co-operation ▪ Increased investment in global environmental facility 	<ul style="list-style-type: none"> ▪ Deteriorating water quality ▪ Difficulties with environmental monitoring

8) Characteristics of the Northwest federal district

General characteristics

The North Western Federal District (NWFD) is located in the North and the northwest of the European part of Russia and includes in the structure of 11 subjects of the Russian Federation: Republics of Karelia and Komi, Arkhangelsk, Vologda, Murmansk, Leningrad, Novgorod, Pskov, Kaliningrad areas, Nenets Autonomous Area, city of St. Petersburg. The center of the district is the city of federal value St. Petersburg. The Northwest federal district holds advantageous geopolitical position — borders on Finland, Norway, Poland, Estonia, Latvia, Lithuania, Belarus, has an exit in Baltic, White, Barents, Karsky exhausting. The area of the district makes 1677,9 thousand sq. kilometers — 10,5% of the territory of Russia. In the Northwest federal district live 14484,5 thousand people, from which urban population — 11844,6 thousand people (81,8%). The region has the highest rate of an urbanization among federal districts: more than 80% of inhabitants — city, thus the considerable proportion is concentrated in the St. Petersburg agglomeration largest in the country. Average population density in the district — 8,6 persons on 1 sq. kilometer. The national structure is non-uniform: population majority — Russians, among other nations prevail the Komi, Karelians, the Sami, Nenets. The considerable sizes of the territory of the district define a variety of its environment. The flat and poorly hilly relief passing to the East in a mountain strip of Northern, Subpolar and Polar Ural Mountains prevails. In the north of the district within the Kola Peninsula a low-massif of the Hibinsky and Lovozersky tundra is located. The territory of the district is in zones of the mixed woods, a taiga, the forest-tundra, and also the tundra (in the areas adjoining the coast of the Arctic Ocean, and on the Arctic islands). Water resources of the district to which share nearly a half of resources of the European part

of the country falls are considerable. The largest rivers — Northern Dvina with inflows by Vychegda and Sukhona, and also Pechora. Only there are a lot of lakes, especially in northwest part of the district. There are largest lakes of Europe — Ladoga and Onega. At the same time the southwest of the district acts as the large industrial area specializing on production of the knowledge-intensive production first of all of the composite and precise mechanical engineering, output of the chemical and forest industry, consumer goods. Existence of developed port economy defines export-import functions of the area on the Baltic Sea. The region takes the second place among federal districts (after Central) on volume basis attracted foreign investments, the fourth — on receipts of taxes and fees in the federal budget, the fifth — on volumes of VRP and industrial production. Monetary income of the population of the district is at the average Russian level. (Source: Northwestern Federal District: the features and directions of regional development, available in [www-pages http://nwapa.spb.ru/sajt_ibo/vistavki/sevzap.html](http://nwapa.spb.ru/sajt_ibo/vistavki/sevzap.html))

The leading place in an economic complex of the district belongs to the industry in which over 23% from total number taken in economy and about 37% working in primary branches of production of goods are occupied. The noticeable role in structure of employment is played also by trade and public catering, construction and transport. In structure of industrial production, on the one hand, the important place is taken by raw branches: fuel (more than 9% of all industrial output), ferrous metallurgy (nearly 13%), forest, woodworking and pulp-and-paper (over 11%). On the other hand, in large industrial centers various branches of mechanical engineering and metal working (more than 15%), and also food (about 17%) the industries have potent development. The Northwest federal district is large mineral resources of the Russian Federation. Stocks of ores of ferrous and non-ferrous metals — iron oxides of the Kola Peninsula and Karelia making about 5% of the all-Russian stocks, copper-nickel ores of the Kola Peninsula, bauxites, titanium bearing raw materials are allocated. Federal value have Hibinsky nepheline - apatite fields. The fuel and energy complex of the district leans substantially on characteristic fuel and energy resources — naphtha, gas, coal, slates, peat and a hydroenergy potential. On level of security the district occupies with them one of leading places in European. Not Russia though is scarce on naphtha and especially on gas. Idiosyncrasy of the energy sector of the region is nonuniform placement of the centers of production and consumption of fuel and energy resources. The main part of oil production, gas and coal is concentrated in the east of the district, and consumption — in the western part that causes development in the region of power transport systems. (Source: Northwestern Federal District: the features and directions of regional development, available in [www-pages http://nwapa.spb.ru/sajt_ibo/vistavki/sevzap.html](http://nwapa.spb.ru/sajt_ibo/vistavki/sevzap.html))

Integral SWOT analysis of opportunities of social and economic development of the North Western federal district during the period till 2020.

	Advantages	Disadvantages
1. the geopolitical situation and the natural environment	1) common boundaries with different countries of Europe and the developed areas of Russia 2) St. Petersburg is the largest city in Russia and Europe 3) open access to the waters of the oceans 4) Significant natural resource potential	1) unstable position of the Kaliningrad region NWFD 2) presence of areas with severe climatic conditions and areas unsuitable for conducting economic activity (new Earth)

	5) The main part of the territory of the Northwest federal district is favorable for conducting economic activity	
2. the people	<ol style="list-style-type: none"> 1) slowing population decline NWFD 2) urbanized territories 3) highly educated population 4) Fairly low unemployment 5) a temporary increase in the proportion of people of working age 	<ol style="list-style-type: none"> 1) high mortality and reduced life expectancy 2) low fertility 3) in-migration does not reimburse the normal loss of population 4) low level of qualifications of incoming migration of masses 5) outflow of people (especially young people) of rural settlements into urban
3. the economy	<ol style="list-style-type: none"> 1) Powerful natural resource and production base 2) high educational and scientific-technical potential 3) developed transport infrastructure 4) Diversified economic structure of NORTH-WEST FEDERAL REGION and diversified production 5) High effective demand 	<ol style="list-style-type: none"> 1) service sector growth slowed-down 2) High specific weight of fuel and energy complex, raw sector and military industrial complex enterprises 3) shortage of investment in the regions of the NORTH-WEST FEDERAL DISTRICT
4. transport	<ol style="list-style-type: none"> 1) Powerful transport hub 2) presence of major sea and river ports, airports, train stations, highways 3) Developing pipeline transport 	<ol style="list-style-type: none"> 1) poor quality of roads, major hers wear 2) Uneven, unsustainable configuration transport routes of highways 3) Inadequacy of international transport corridors
5. housing and infrastructure	<ol style="list-style-type: none"> 1) high degree of urbanization 2) there are significant contingents of the population seeking to improve housing conditions 	<ol style="list-style-type: none"> 1) Considerable housing and utility wear 2) lack a well-developed modern infrastructure in many regions of the NORTH-WEST FEDERAL DISTRICT
6. taxes and budgetary sphere	<ol style="list-style-type: none"> 1) presence of large subjects of the Russian Federation – donors 2) Existence of large economic structures (the companies defining the budget) 	The number of subsidized regions and territories without sufficient starting conditions and development potential
7. the population's income	The emergence of high-tech industries with a high level of payment for workers	<ol style="list-style-type: none"> 1) increasing emphasis on inflation 2) the bulk of the population — the current consumption (food)

8. environmental science	1) Significant amount of environmentally friendly territories 2) Improvement of system of especially protected natural territories	1) Slow the reproduction of the environment and renewable natural resources 2) Increased anthropogenic burden on the County's ecosystems
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(Source: To the North Western federal district - 5 years analysis. 2005. Tendencies, prospects. SPb, Knowledge)

9) Current state of industry of alternative energy

In regions of the North West the alternative power engineering Regions of the Northwest federal district everything develops master alternative energy sources more actively. However at introduction of new technologies power engineerings of the different cities and areas of the North West of Russia should overcome some difficulties about which we and will talk today.

Murmansk region

Proceeding from the calculations of staff of the Kola Russian Academy of Sciences scientific center confirmed with practical experience of local experts, "green" energy in Murmansk region has an actual prospect to become not only available, but also favorable.

Scientists of the Kola Russian Academy of Sciences scientific center Grigory Dmitriev and Valery Minin claim that the peninsula possesses the huge potential of "true" energy: estimated resources of the alternative power engineering in the Polar region exceed 18 billion kWh, including it is possible to receive about 11 billion kWh of energy of inflow, nearly 4 billion — the small rivers, about 3 billion — waves, 110 thousand kWh of solar energy and 21 thousand — wind. For comparison: on the Kola nuclear power plant 10 billion kWh or more than 57% of the electricity made by all power plants of Murmansk region are annually developed on the average.

And if use of solar energy during long polar night is rather problematic, wind power seems to much more available: its development even for 1-2% would bring to the region about 3-7 billion kWh and poryadka 1-2 one million kW of power. Thus the cost of heating by the wind turbine is comparable to black oil boiler rooms.

One more nonconventional source — the biogas developed from organic raw materials. In the nineties the XX century in the settlement Leypi on the basis of the Kovdor agrocomplex constructed the first installation in the northwest on receiving biogas of manure weight. And though Sergey Kolovanov's her founder from Kandalaksha considered that the raw materials which is available on an agrocomplex, would suffice on development of energy not only for the enterprise, but also for all settlement, the management of a complex regarded installation activity as unprofitable and stopped its use.

Now Sergey Kolovanov's researches concern production of biogas from an eykhanoriya — the tropical plant which is also called by a water hyacinth. One ton of these raw materials is a source for receiving not less than 300 cubic meters of the biogas which structure is similar to the natural. Thus 1 kWh of such energy costs from 40 to 70 kopeks, that is 10 times cheaper than "black oil" heat.

Developers the regional long-term target program on energy saving and energy efficiency increase for 2010-2015 and for the period till 2020 suggested to install in the remote settlements independent the diesel-wind power plants. To financing of these works extrabudgetary funds will be raised. According to the area management, the corresponding work with investors already began.

Republic of Karelia

The leaders of the republic developed regional strategy of development of the fuel branch, based on use of local energy resources. It is planned that till 2015 the share of local fuel will increase with present 19,3 to 25%. In 2011 in Karelia 4,8 MWt "Lyaskel's" being the single small hydroelectric power station of Russia with qualification of a source of renewable energy the hydroelectric power station was started. The energy developed by this power plant, it is enough for satisfaction of needs of inhabitants of 8,5 thousand standard apartments.

In plans of power engineering specialists — construction in 2018-2026 of three more hydroelectric power stations, cumulative which electric capacity will make 131-187 MWt, and average annual annealing of the electric power — 519,3 million kWh.

The government of Karelia also planned development wind energy. Under the agreement of administration of the republic and the Wind Power Systems company in 2014-2016 in Kemsy and Belomorsk areas 8 wind farms in 14 billion rubles will be constructed in the total cost. Design capacity of one such installation makes 24 MWt. (Source: Northwest information center. Energy Efficiency and resource-saving, available in www-pages www.spbenergo.com).

Factor analysis: opportunities and constraints for the particular trans-border cluster to grow

Opportunities:

- Finnish government supports the production of renewable energy with tariffs, production support and with financial support for investments.
- Target to Finland is to get 38% of the national energy consumption from renewable energy sources before the year 2020. (Gasum, 2011)
- Good financing opportunities for companies (The Financials,2012)
- Ecological consumption (greener energy), health safety
- Changing of the new technologies, innovations with the cluster companies.

Constraints:

- Taxes rates
- Monopoly of importing gas (no competitiveness, Gasum determined the prices)
- Access to financing
- Insufficient capacity to innovate

(World economic forum, 2012, the most problematic factors for doing business)

- Political risks (inflation, crisis in the middle-East, risk of war)

Further development of the strategic relationships is in the interest of both sides Finland and Russia. Committing the Russian companies to the Finnish economy through strategic partnerships and investment opportunities would benefit not only the Russian companies' ambitions abroad but also the Finnish counterparts dependent on the Russian supplies. From the viewpoint of Finnish companies interested in entering Russia, it should be noted that the Russian energy sector has high barriers for entry because of the access to main energy resources is already reserved to a few major players. Also, transport is controlled by natural monopolies (gas pipelines and power transmission lines). The state ownership in the oil industry is increasing and the gas sector is firmly in state hands. Moreover, the splitting of natural monopolies into smaller units does not necessarily result in increased competition if these units are controlled by the public sector. In the sphere of energy saving and environmentally sound technology there are good prospects for Finnish-Russian cooperation. (Ivanova, O. & Kaipio, H. & Karhunen, P. & Leppänen, S. & Mashkina, O. & Sharafutdinova, E. & Thorne, T. 2006)

10) Cluster analysis

Finland and Russia has signed an agreement where they will research methods to use energy more efficiently. This research includes development of energy market and promotion of energy efficiency including bioenergy. This will give an opportunity for both countries corporations to do cross border co-operation in renewable energy sector and so the joint venture could enter bigger international markets. (Ministry of employment and the economy, 2012)

What Finnish and Russian companies could do as a cluster is to do more collaboration so that they could enter the international markets in Europe as well. As the target for European Union is to decrease the use of fossil fuels, it would bring up more opportunities for new innovations for the energy production industry. With the newest technology, companies can do energy from landfills and so it can be a possibility to gather the waste from households to a production line and from there it can be transferred into energy for re-use.

11) Power clusters in Russia

Development of the alternative power engineering in Russia is intimately bound to development of regions - and first of all what are removed from long distance pipe lines. Experts note that support of projects of renewables is pertinent within the target programs developed by the Ministry of Regional development, however such programs concerning, are not present today, and the Ministry of Regional Development does not participate in any way in development of the alternative power engineering.

At prediction of demand for energy resources it is necessary to consider that the territory of the Russian Federation is characterized by nonuniformity of placement of generating capacities and sources of fuel resources. Separation of regions of the country on security with fuel and energy resources causes expediency – as managements of social and economic development of regions taking into account their territorial specifics, and need of interregional interaction concerning resource provision. Introduction in regions of cluster approach popular now is represented to one of the most perspective ways of the solution of

this task when developing regional power strategy, and, taking into account opportunities of interaction of clusters of different regions among themselves. For example, in Finland the power cluster uniting oil and gas-chemical, electrical power, engineering and the power engineering companies that allowed to increase energy efficiency and environmental friendliness of a power engineering of the country is created.

Despite positive world experience, cluster approach in Russia it is yet enough developed that is substantially caused by lack of necessary support of small business, and also low level of infrastructure. The inefficiency of functioning of infrastructure branches of the Russian economy does not allow to adopt the majority of ideas of creation of production clusters at foreign countries as in this case formation of clusters will not bring expected effect.

At the same time in the message of the President of the Russian Federation the task, consisting that the share of manufacturing enterprises of small business in structure of gross domestic product has to make 70% is formulated. However, as show researches, achievement of such index is difficult now, in view of action on development of small business in the sphere of production of limiting factors, for example, existence of difficulties with connection to electrical networks. Thus the prospect of achievement of 70% of a share of small business in gross domestic product of the country is represented to more realistic in the conditions of realization of cluster policy concerning manufacturing enterprises of small and medium business. Therefore, the cluster policy of the country and regions has to be directed, first of all, on a solution of the problem of backwardness of infrastructure for effectiveness and competitiveness increase, both branches of small business, and economy as a whole.

12) Cooperation of branches on the basis of a power cluster

Creation of efficient production clusters in Russia is impossible without development of infrastructure branches, namely fuel and energy sector, a transport network, a housing-and-municipal complex, etc. It is offered to provide increase of effectiveness of the specified branches by their cooperation on the basis of a power cluster, i.e. inclusion in cluster structure besides the power companies, also the enterprises of other branches as their kinds of activity are interdependent and interdependent. The purpose of creation of regional power clusters can be thus formulated as development of a power engineering and the related branches of the region through inducing of the group of companies, interacting with the power enterprises, to realization collateral with them politicians of energy saving and reduction on this basis of product cost (services). (Michailov S.N., Balabina A.A, 2008. Regional energy clusters: Problems and Prospects. "Russian business» № 10 Vol. 1 (120))

As a result, we can construct the following scheme:

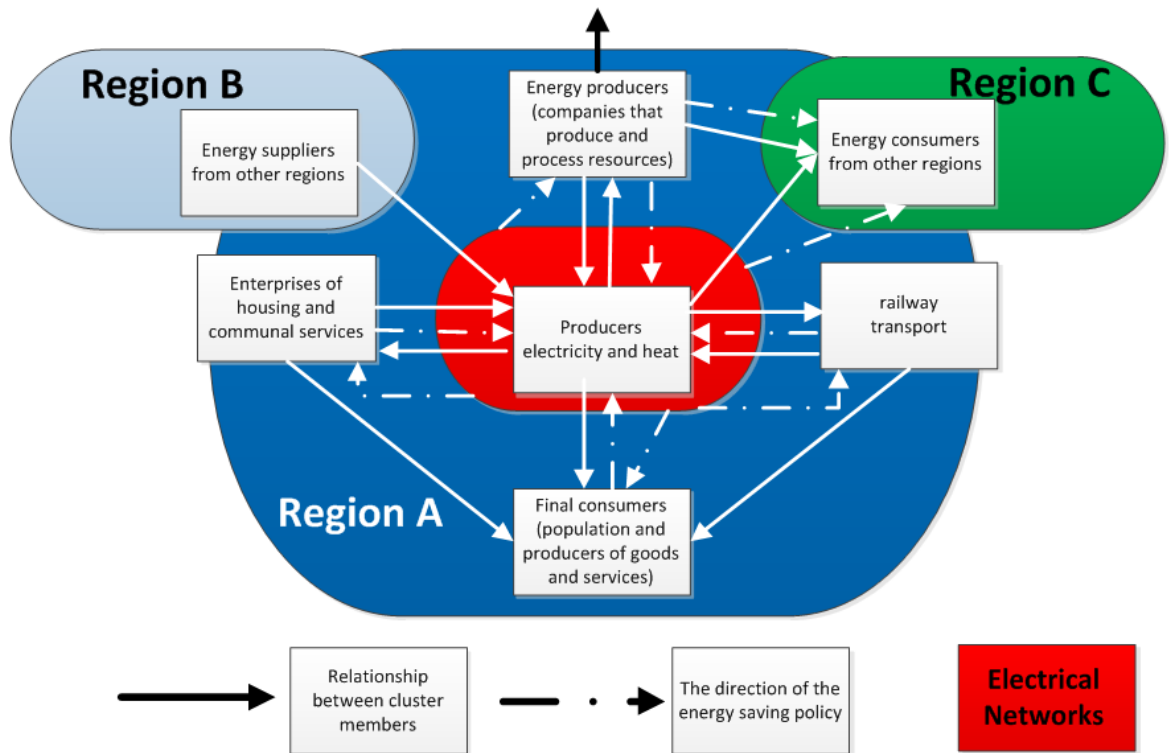


Fig.: participants of a regional power cluster and their interaction

From the scheme it is visible that energy saving and loss control of energy resources within a power cluster will allow to reduce at consumers of all levels of expenses by production of power branch that will lead to decrease of the product cost made in the region, and increase of its competitiveness on world and domestic the markets, and also to improvement of a standard of living of the population. In drawing the possible directions of interregional interactions also are simply shown, i.e. the regional power cluster can be to some extent open system. However that communications with other regions could be realized in practice, it is required not only to create cluster structure, but also to provide the regulatory base necessary for the organization of such interrelations. Development and exercise of complex policy of energy saving at the enterprises of the branches entering into a cluster has to become the main instrument of achievement of an overall objective of creation of a regional power cluster. It assumes inclusion in investment programs of such enterprises of the component directed on development and (or) introduction of resource-saving and energy saving technologies. For example, decrease in normative losses of the electric power by its transfer on electrical networks will allow to reduce tariffs for these services and a share of expenses for the electric power in structure of cost of products of other industries. Besides, the enterprises consumers of the electric power entering into a power cluster, will be able to carry out investments into technologies of the energy saving, allowing to reduce electricity consumption volumes in natural expression. (Michailov S.N., Balabina A.A, 2008. Regional energy clusters: Problems and Prospects. "Russian business» № 10 Vol. 1 (120))

Thus, creation on the basis of the enterprises of power industry and some other branches will allow to get the following advantages in regions of clusters.

1) Increase of competitiveness of participants of a cluster (including naturally exclusive sectors) at the expense of introduction of a comprehensive approach to energy

saving, reduction of losses of energy resources, and, respectively, rise of to this basis of competitiveness of regions and the countries as a whole.

2) Ensuring high intersectoral coherence.

3) Support of interests of all participants of a cluster, in particular at interaction with regional and government bodies of the power.

Data acquisition of advantages can be provided, mainly, due to partnership on introduction of programs of energy saving and reduction of losses of energy resources, and also integrated management of the considered sectors. (Michailov S.N., Balabina A.A, 2008. Regional energy clusters: Problems and Prospects. "Russian business» № 10 Vol. 1 (120))

13) **Cluster models**

Possible motives of integration of the enterprises can be shared into 6 groups conditionally:

1) Strategic:

- the adaptation to an environment of the existing market (consumers, products, technologies);
- the relative interest in coordination of market activity;
- development of the new markets;
- increases of system effectiveness of deliveries of raw materials, components and accessories;
- receiving synergetic effect from interaction.

2) Organizational and economic:

- own uniform infrastructure;
- optimization of business processes;
- economy on transaction expenses;
- possibility of implementation of mutually advantageous investment projects and programs;

3) Social:

- preservation of skilled workers of shots;
- creation of additional workplaces;
- formation of small and medium business in the environment of service and functioning of the integrated cluster;
- decrease in social tension.

4) Technical and economic:

- desire most fully to use available capacities and to keep production potential;
- alternative options of use of raw materials, materials, technologies;
- availability and quality of specialized service;

5) Investment:

• access to considerable financial and investment resources, including at the expense of creation of own financial infrastructure and at the expense of consolidation of various sources of investments;

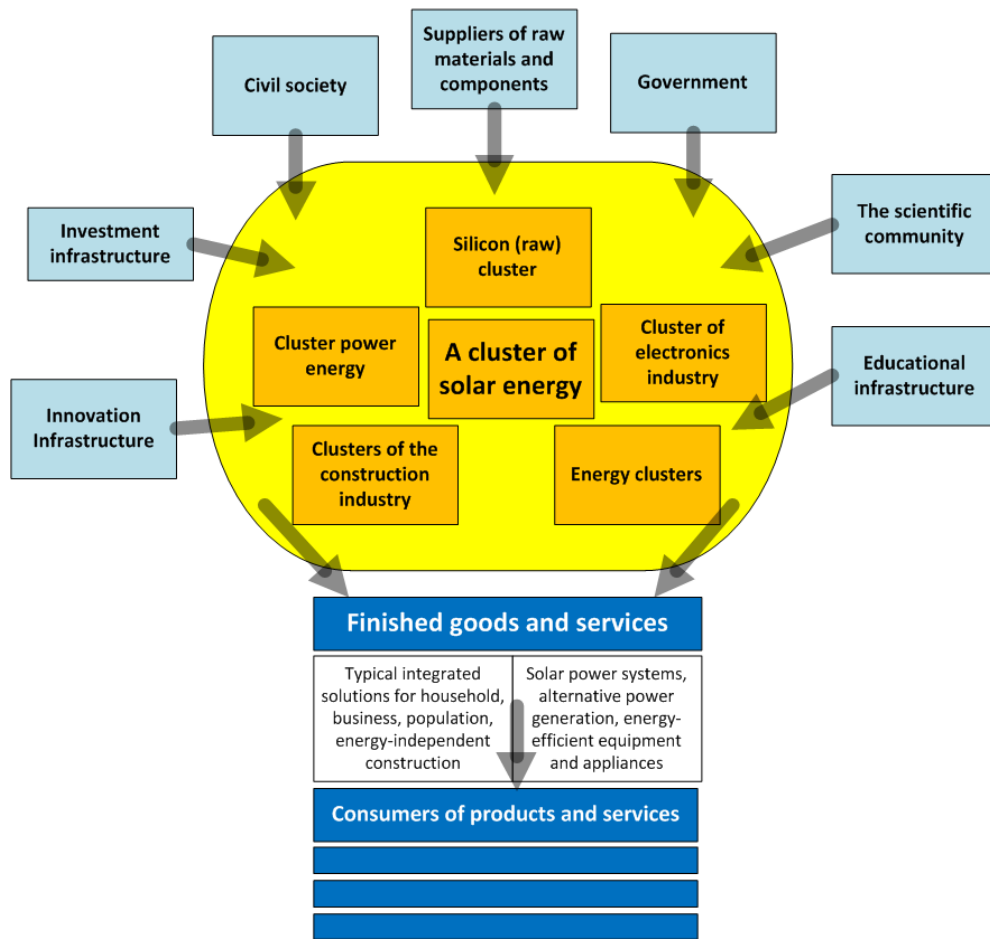
• system creation for detection of collective benefits and dangers, formations of the general vision and productive strategy of development of a cluster.

6) Innovative:

- availability and quality of opportunities to carrying out research and development;
- availability of specialized and productive human resources;
- creation of a network of the conventional and informal attitudes for transfer of market and technological information, knowledge and experience;

Cluster model on the example of use of solar energy

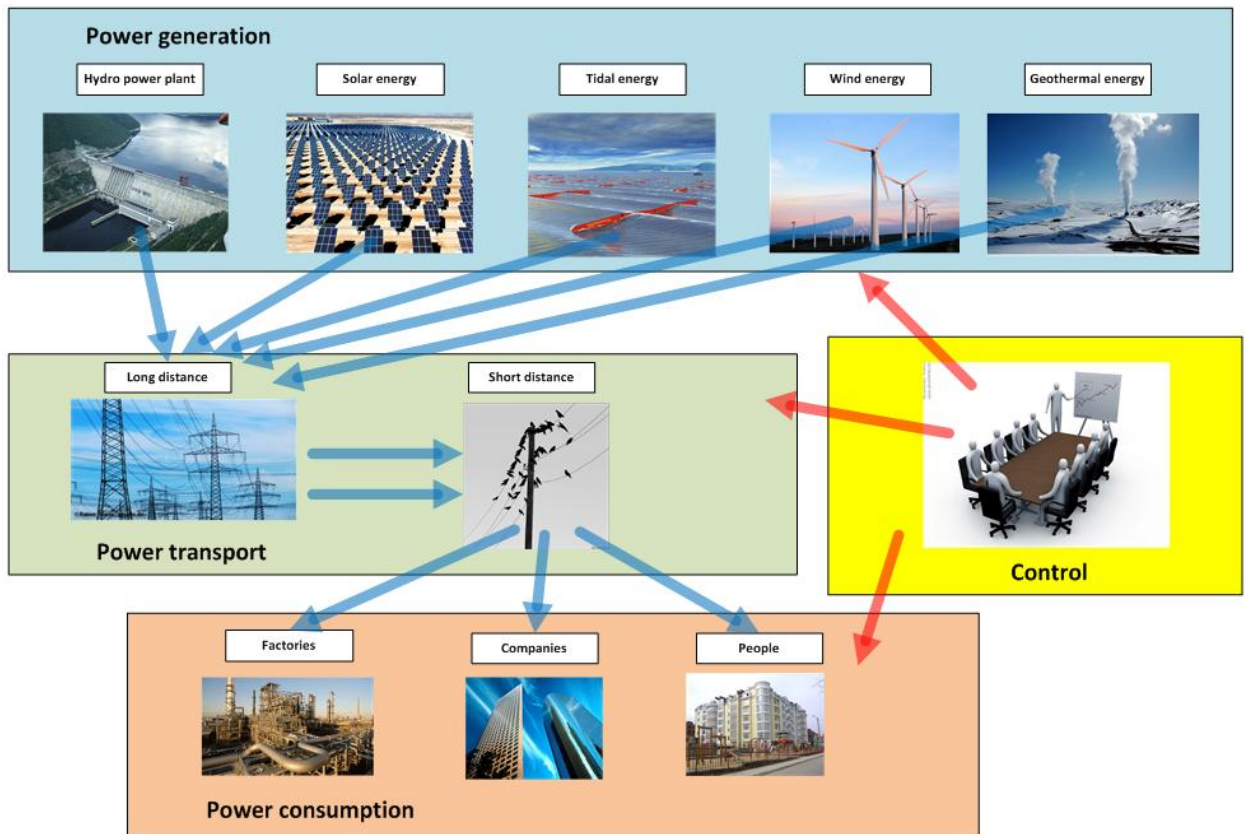
The basic model of the intersectoral integrated cluster can look as follows:



Model of integrated cluster of solar energy

Technological power supply scheme.

- Technological pattern of power supply from generating companies to consumers
- Energy is produced by hydroelectric power plants, the source of solar energy, tidal energy, wind energy, geothermal energy and other sources.
- Then the energy is distributed on energy routes to large areas.
- After that, the energy from local power grids passed to consumers.



Technological power supply scheme.

Value Chain, business scheme (Source: Skorlygin, V. & Chernega, S. & Makolkin, D. & Lähteenmäki, H. 2012. FinPro Smart Grids – Finnish-Russian Technology Platform Report).

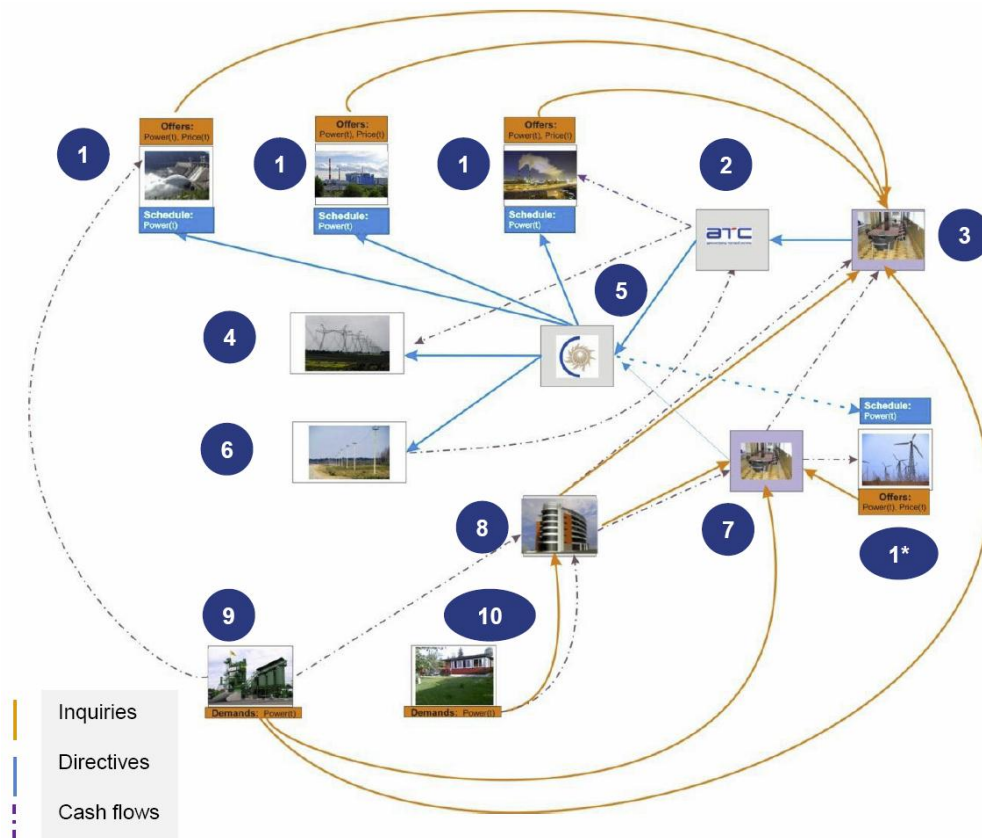
- Generating companies 1 send their proposals on power supply schedule and price to the wholesale market 3.

- Industrial consumers 9 and power supply companies 8, depending on the required supply volume send requests either to wholesale 3 or retail 7 markets.

- Upon bidding, prices for each supplier and consumer, as well as time schedule of supply for suppliers are formed, which Trading System Administrator 2 is responsible for. He is also the one who is responsible for financial calculations in the market.

- Technical coordination of suppliers' work schedule and energy system management is carried out by the System operator of UES 5.

Individual consumers sign power supply contracts with retail companies selling energy 8 (which buy energy in wholesale 3 or retail 7 market). Consumers 9 of high volumes may sign the contract directly with a generating company.



The price of electricity for end users depends on

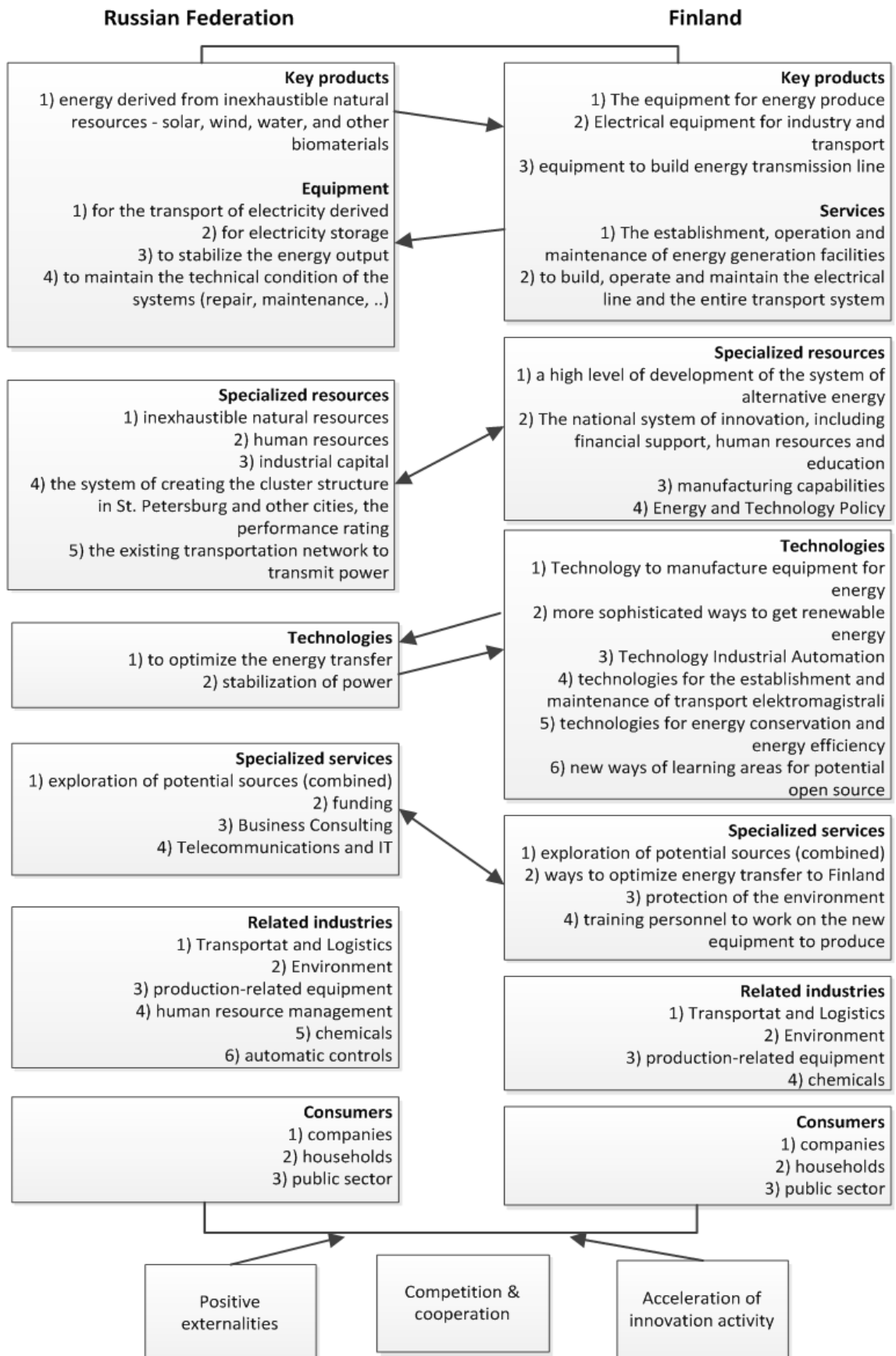
- Category of user:
 - industrial,
 - private persons and public - schools, hospitals, associations of gardeners, other budgetary institutions)
- geographical location

Electricity prices for private and public category users offered by the electricity supplier can not exceed the tariff limits prescribed annually by the Regional Energy Commission. The latter pricing is based on the average prices of wholesale market and middle-income of regional population.

Creation of the cluster map

The energy sector of the Northwest Russia is a powerful complex consisting primarily of Russian firms specialising in the extraction and processing of hydrocarbons, electric power production and distribution and power engineering. Many leading companies export their products, however these exports are either made up mostly of raw oil and gas or of low-processed mineral oils, or, have weak competitive positions in the largest and most solvent markets of developed countries.

Factors that form already created and intended to create clusters are low level of concentration of production in the industry, low competitiveness, the appearance or existence of the investment project, that will unit enterprises in the industry, and presence of investors and interested parties (government, business, society). (Ministry of Region Development, 2011. The strategy of socio-economic development of the North-West Federal District – 2020. http://www.minregion.ru/upload/documents/2012/01/230112/230112_2074_r_str.pdf)



14) Development of the project on creation of the cluster



Pic.: Potentially possible cluster model in the field of alternative energy (developed by the author).

Resources: from all sources will be the most efficient use of wind energy, geothermal and tidal power, as these species are in the area. Is also an advantage that it is possible to install equipment for the generation of energy in areas where low population density (will not interfere with the residents), and not far from Finland, which will reduce the cost of transporting energy. As a result, there are two main areas where advantageous to place the equipment for power generation (on the map accurately marked potential points for the

installation of equipment for mining). Work is carried out by Russian personnel with Finnish leaders are trained Russian personnel (increased technical competence).

Equipment: Finland Russia supplies equipment at preferential conditions. The equipment for the generation of energy, ensuring energy industry, transport exchange between countries (advantage: Finnish quality). The energy used for transmission to consumers through power lines, and for the accumulation of energy storage, including for the purpose of stabilizing the supply of energy resources. Storage equipment also supplies Finland on preferential terms.

Payback for Finland as inexhaustible sources can be used indefinitely, for the creation of an international Finnish cluster is advantageous in the case of long-term contract for the supply of energy produced from Russia to Finland.

Electric Line: Finland carries out the installation of power lines to transmit energy, pays for this process (beneficial for both sides, since it results in a reliable way to deliver energy to Finland, lower risk, no cost for Russia). Service by Finnish staff, Finnish leaders to ensure appropriate quality of energy transfer between Russia and Finland to set standards (with the possibility of teaching the Russian staff to improve service efficiency of energy transport networks in Russia.)

Delivery of resources: a part of the energy generated is delivered to Finland on preferential terms, which is used by local Finnish consumers. The rest is used by Russia to use (this is already in use Russia's energy transmission system, but when creating or improving old ones used by the Finnish Technology). Ratio is regulated by contractual relations between Russia and Finland.

Consumers are both in Finland and in Russia - a country, company, householders.

Ensuring delivery: stabilizing energy supply by Russian staff under the direction of the Finnish leaders. Equipment for stabilizing the power generated energy supplies Finland on preferential terms.

Saving energy: Russia is fully using Russian equipment, both to further stabilize the energy supply in Finland (responsible for the quality of products or services, ensuring the process is the Russian side), and to further implement

Service: Maintenance and repair of equipment for energy production is produced by the Finnish side, as is learning Russian personnel. Maintenance of power lines is

Technology: especially important for Russia because of the high level of alternative energy development in Finland and high technology in the field. Mutual exchange of experience in the energy sector as a whole, the limited acquisition of technologies for production of equipment for power generation, the study of more technologically efficient way to obtain renewable wind energy, geothermal and tidal power, the study of technologies for the creation and maintenance of highways, energy-saving technologies and new potential finding new sources of energy

Labour: from Finland to attract highly qualified

Financial support only from the Russian side, the Finnish investments are in the form of equipment and installation costs, which will decrease over time as a consequence of reduced energy supply in Finland and the limited involvement of the Finnish labor force.

RusHydro is a Russian hydroelectricity company. As of early 2012 it has a capacity of 34.9 gigawatts (Source: RusHydro, available in [www-pages http://www.eng.rushydro.ru/company](http://www.eng.rushydro.ru/company)). It is the world's second-largest hydroelectric power producer (Paxton, R. 2009. Russia appoints Sechin ally to manage hydro giant. Reuters) and is the country's largest power-generating company and the largest successor to RAO UES. The conglomerate, which is partly government-owned, underwent a major consolidation beginning in July, 2007 (Antonova, M. & Krainova, N. 2009. 10 Dead, 72 Missing in Dam Disaster. The Moscow Times). The head of the company is Yevgeny Dod. Its head office is in Obruchevsky District, South-Western Administrative Okrug, Moscow.

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**ANALYSIS OF OPPORTUNITIES FOR DEVELOPING TRANS-
BORDER FINNISH-RUSSIAN INTER-ORGANIZATIONAL NETWORKS
(CLUSTERS) IN FOOD INDUSTRY**

Introduction

Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, and associated institutions in a particular field that are present in a nation or region. Clusters arise because they increase the productivity with which companies can compete. The development and upgrading of clusters is an important agenda for governments, companies, and other institutions. Cluster development initiatives are an important new direction in economic policy, building on earlier efforts in macroeconomic stabilization, privatization, market opening, and reducing the costs of doing business (Institute for Strategy and Competitiveness).

This work is done to examine opportunities for developing trans-border clusters between Finland and Russia, particularly its border regions, Southeast Finland and Northwest Russia. The detailed research of Finland and its border region with Russia is done according to Michael Porter's Institute for Strategy and Competitiveness. Finland's business environments, national competitiveness, factor analysis, clusters analysis are examined. PESTLE analysis of Finland is done as well. Main national clusters of Finland are presented in this work to show the good example of the cluster approach. According this research Russian companies can estimate the opportunities and constrains to enter Finnish market or develop inter-organizational networks. That is main purpose of this work: creation of the ground research of Finland for estimating opportunities of Finnish-Russian trans-border cooperation to the benefit of both regions.

Northwest Russia is big region. It opens many opportunities for Finland to develop trade and other business sectors ties, like Tourism, Logistics, Forest, Health and Well-being, Energy sectors etc. In this work it is researched opportunities for creating and developing inter-organizational networks in food industry. Possible participants in the food industry cluster are considered: main food and agro producers, retailers, logistic companies, R&D institutes etc.

Porter's Institute for Strategy and Competitiveness is good source for studying national competitiveness and cluster's creating. A lot of internet sources were useful to deep knowledge about Finland, its economic situation and business environment.

Northwest Russia and food industry in brief

The Northwestern federal district consists of the northern part of European Russia (Picture 1). The area is 1,677,900 square kilometers (9,8 % of all area of Russia).

External border: Finland, Estonia, Latvia, Belarus. Internal boarder: Central federal district, Volga federal district, Urals federal district.



Picture 1. A map of Northwestern federal district

The population for 2009 year - 13 462 000 (9,5 % of all population of Russia). About half people live in Saint-Petersburg and Leningrad Oblast, more than 80 % are urban. Most of them are Russians (85,89 %).

Economy of Northwest Russia has a large raw focus. Here there are concentrated about 72 % stocks and almost 100 % of extraction of apatite, about 77 % stocks of titan, 45 % stocks of bauxites, 19 % stocks of mineral waters, about 18 % stocks of diamonds and nickel. The major part for economy of district is oil and coal extraction.

The leading place in an economic complex belongs to industry. 23 % of all working force is borrowed there. Trade, food service, construction and transport take also an important role in employment pattern.

Saint-Petersburg takes leading place in economy of the district, providing 39% of WDM, 31 % of industrial manufacture, 49 % of return of duties and taxes to the federal budget. Population of the city is about 5 million people. The town specializes on production of power machine building, tractor construction, shipbuilding, exact instrument making, radio-electronic chemical and petrochemical industry, light and food industry. There is an important sea port. Saint-Petersburg is a cultural capital of Russia. Usually different international forums and meetings are being taken there.

Food industry in St. Petersburg and Leningrad area is developed well. Town Gatchina, Vyborg region, Lomonosov region, Luga region, Kingisepp region contribute most to the food industry's development.

Pskov region disposes half of agricultural sector in Northwest Russia. Basis of agricultural sector are meat and milk livestock sector, vegetable and potato manufacturing, and flax-growing. At the moment more 80 enterprises operates in agricultural sector. Fish production is developed as well.

Bread baking is well developed sector. More 60 small and big bakeries operate in this region. The biggest bread baking enterprises in Leningrad region are OAO "Kalishchekhlebs", OAO "Gatchinskiy khlebokombinat", and OAO "Volhovkhleb". OAO "Vyborgskiy kombinat khleboproduktov" is one meal production enterprise in Leningrad region.

Milk production. At the moment 2 milk enterprises and 23 milk factories operate in Leningrad district. Best milk factories and enterprises are OAO "Gatchinskiy molochny zavod" and OAO "Luzhskiy molochny kombinat".

Most successful meat enterprises are OOO "Pit-Product" (Vsevolozhsk region), PO "Gatchinskiy promkombinat" (Gatchina region), OAO "Luzhskiy myasokombinat", and OAO "Tikhvinskiy myasokombinat".

Clusters' role in economical development of a country

Existing of clusters allows national fields to develop and maintain own competitive advantage, sometimes even on the level of more developed countries. Thanks to clusters related technologies, infrastructure, human resources etc. are being developed and increased between border regions intensifying competitive advantage of regions in both countries. International competitiveness of a country is increased as well. Often cluster approach helps small enterprises to be survived on globalized markets under severe competition and increasing international competition. Small enterprises combined in a cluster can gain more that to operate separately, because they are not able to satisfy a demand of big market areas.

Some cluster exists quite long and is not changed and improved long time. Nonstop improving of a cluster is important. Development of relationships in a cluster stimulates innovation activity and contributes to development of progressive

technologies, also improves stages of joint economic activity. As cluster partners (suppliers and consumers) have contact with many other useful companies and rivals. Improving interaction in a cluster competitive advantage and new opportunities are appeared.

Developing of a cluster policy in a region is important because regional economy is diversified first of all, number of taxpayers is increased, budget dependence from separate business groups is decreased etc. Business gains from a cluster approach as well. Human resources and region infrastructure are used properly; there is an access to researches and recommendation of scientific centers. Costs are decreased and new markets are more available for business sector.

Developing of trans-border clusters is important for a country economy. Foreign firms enhance productivity and externality, as consequence it is contributed to local employment and investment (Porter, 1990).

According to Harward school of Business as more clusters are developed in separate country, as the life quality and companies' competitiveness is higher (Harward School of Business).

Analysis of international competitiveness

Before entering to international market, the analysis who the firm created and develops competitive advantages in the international market should be done. Development of a firm's international competitiveness takes place interactively with the environment. The firm must be able to adjust to customers, competitors and public authorities. To be able to participate in the international competitive arena the firm must have established a competitive basis consisting of resources, competences and relations to others in the international arena.

To enable an understanding of the development of a firm's international competitiveness in a broader perspective, a model in three stages will be presented (Hollensen, 2004. p. 84):

1. analysis of national competitiveness (the Porter diamond);

The analysis starts at the macro level, where the Porter diamond indicated that the characteristics of the home nation play a central role in the firm's international success.

2. competition analysis in an industry (Porter's five forces);

Porter's five forces model suggests that competition in an industry is rooted in its underlying economic structure and goes beyond the behavior of current competitors. The state of competition depends upon five basic competitive forces, which determine the profit potential in an industry.

3. value chain analysis:

- competitive triangle;
- benchmarking.

Here we look at what creates a competitive advantage at the same competitive level (among industry competitors). According to the competitive triangle, it can be concluded that firms have a competitive advantage in a market if they offer products with the following: a higher perceived value to the customers; lower relative costs than competing firms.

A firm can find out its competitive advantages or core competences by using competitive benchmarking, which is a technique where customers measure marketplace performance of the firm compared to a 'first-class' competitor. The measures in the value chain that can be used include delivery reliability, each of ordering, after-sales service and quality of sales representation. These value chain activities are chosen on the basis of their importance to the customers. As customers' perceptions change over time, it may be relevant to try and estimate customers' future demands on a supplier of particular products.

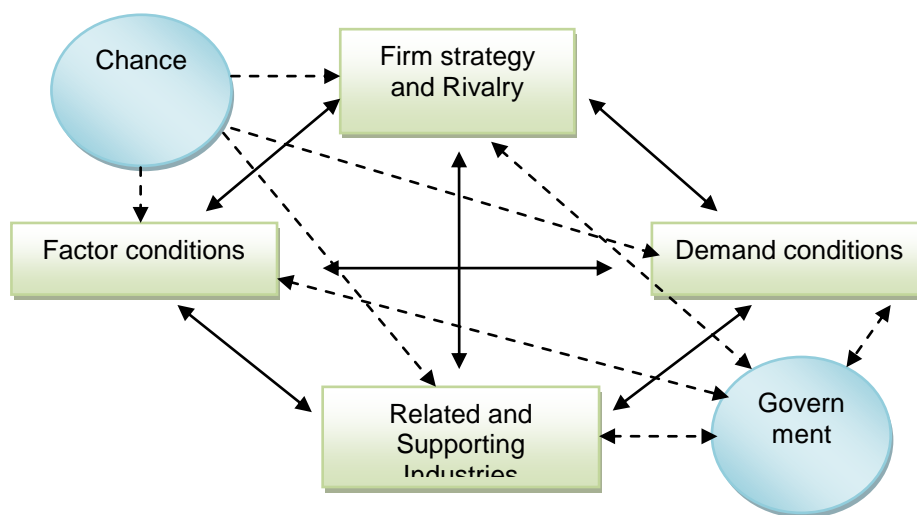
In this report national competitiveness of Finland is examined more detailed than other stages.

National competitiveness of Finland

A nation's prosperity depends on its competitiveness, which is based on the productivity with which it produces goods and services. Sound macroeconomic policies and stable political and legal institutions are necessary but not sufficient

conditions to ensure a prosperous economy. Competitiveness is rooted in a nation's microeconomic fundamentals - the sophistication of company operations and strategies and the quality of the microeconomic business environment in which companies compete. An understanding of the microeconomic foundations of competitiveness is fundamental to national economic policy (Porter, Institute for Strategy and Competitiveness).

Michael Porter used a diamond shaped diagram as the basis of a framework to illustrate the determinants of national advantage. This diamond model represents the national playing field that countries establish for their industries.



Picture 2. Porter's diamond model

Firm Strategy and Rivalry

The Finnish emphasis on equality prevails in the workplace. Organizations are not typically hierarchical and are usually flat in structure. Finns take company policy very seriously and follow the rules. They do not expect favoritism or any exceptions to the rules. Finns respect managers who are experienced and hardworking rather than managers with status alone (Communicaid. Doing business in Finland, 2009).

Since the 1970s, the Finnish government constantly adopted policies that aimed at creating a progressive business climate. In a dynamic world dominated by direct competition, the nature of conditions governing how companies are created, organized, and managed as well as their domestic rivalry may be the difference between the leader and the led. Finland ranks 11th on the Ease of doing business

index. Its position has been improved from the 14th in 2011. To reach this Finland has held a reform called paying taxes – reporting and payment for the value added tax and labor tax were simplified (Doing business 2012). On average it takes 14 days to start a business in Finland.

The sophistication of Finnish firm's operation and strategy, in terms of the nature of competitive advantage and breadth of value-chain remains strong. Moreover, many firms have built solid branding and marketing capabilities.

Openness to Foreign direct investment, thanks to the government policy, is even stronger. The latest value for Foreign direct investment, net inflows in Finland was US dollars 7,071,972,000.00 as of 2010. Over the past 40 years, the value for this indicator has fluctuated between US dollars 12,682,040,000.00 in 2007 and (US dollars 2,285,768,000.00) in 2008 (Index mundi).

According to the Global Competitiveness Index (GCI – World Economic Forum 2012-2013), Finland ranks 3rd among 144 countries. With a rank of 5.55 it was outpaced by Switzerland with 5.72 and Singapore.

The country's quality of public institutions is, on the overall, outstanding. The 2012/2013 GCI report ranks Finland 1st considering: property rights, intellectual property protection, reliability of police services and protection of minority shareholder's interests. Moreover, Transparency International ranks Finland 2nd in its 2011 Corruption Perception Index report (Transparency international, 2012).

Factor conditions

Plenteous in Finland, is a set of well-developed production relevant conditions. Among these include: skilled labor, infrastructure, technology and innovation capabilities that are necessary to compete in a certain industry.

The country's education system is on the high level. According to the Global Competitiveness report Finland ranks 2nd on the Quality of the educational system (World Economic Forum 2012-2013). By the end of 2010, a total of 3,005,000 persons in Finland had attained post-comprehensive level educational qualifications in upper secondary general school education, vocational education, polytechnic education or university education. Four decades earlier, their number was 3.4 times lower, or 882,000. According to Statistics Finland, a total of 28,500 university

degrees were attained in Finland in 2011. This is 2 per cent less than in the year before. Of the degrees attained in 2011, 13,400 were lower university degrees and 12,700 higher university degrees. Completed degrees at the doctorate level numbered 1,650. Foreign citizens attained 1,400 degrees. At the end of 2011, Finland had 888,982 persons aged 15 or under, 3,532,645 persons aged 15 to 64 and 979,640 aged 65 or over (Statistics Finland, 2011).

The country's extensive communication infrastructure, comprising extensive digital fiber-optic and broadband networks, provides domestic and international connectivity. Cellular coverage is ubiquitous. It is one of the most developed information communities of the world.

Transportation is extensive. Road is the most popular mode of transport in Finland. Nevertheless, the country has over 20 international airports and over 100 airfields.

Finland invests heavily in innovation. A national innovation programme administered jointly by the ministry of employment and economy and industry drives the country's innovation engine.

Demand conditions

Although, Finland has a relatively small domestic market, with a population of 5.4 million inhabitants, demand conditions have been exceptionally favorable. The Finns' enthusiasm in adopting new technologies and their willingness to experiment with new services has made Finland a premium market for testing new innovations. (Susanne Taron). Overall buyer sophistication and degree of customer orientation is remarkable (4th rank of 144 and 20th rank of 144 respectively) (World Economic Forum 2012-2013).

Related industries

Like every successful economy, the spatial proximity of upstream and downstream industries is crucial to Finnish industrial cluster as well. Their presence facilitates the exchange of ideas and innovations – hence creating internationally competitive industries.

Key clusters include: information and communications, forest, metal processing, mechanical engineering, foodstuff, business services, construction, energy and the healthcare cluster. The well-being of Finland benefits heavily on the success of these

clusters and of their key industries – on the increase of production, on the employment trends and on the export revenues they acquire.

Role of the government in the cluster creation

Government inevitably plays a variety of roles in a country’s economy. Although roles of government are necessary for economic development, unfortunately they might not be sufficient (Economic Development Quarterly, 2000).

All clusters offer opportunities to improve productivity and support rising wages. Every cluster not only contributes directly to national productivity but also can affect the productivity of other clusters. This means that traditional clusters, such as agriculture, should be upgraded. Government influences on cluster upgrading. The process of cluster upgrading involves recognition that a cluster is present and then removing obstacles, relaxing constraints, and eliminating inefficiencies that impede productivity and innovation in the cluster. Constraints include human resources, infrastructure, and regulatory constraints. Some of these constraints are the result of government policies and institutions and must be addressed by government (Economic Development Quarterly, 2000).

Government can create favorable conditions to form financially solvent demand to the cluster produce with a help of governmental purchases and export incentive policy (Table 1) (Bondarenko, Development of cluster competition in national economy).

Lifecycle	Methods of government regulation
Formation	Infrastructure developing, innovative projects’ financing
Growth	Forming of financially solvent demand to a cluster’s produce; foreign-trade strategy directed to export increase
Development	Antimonopoly regulation of a cluster’s activity

Table 1. Methods of government regulation on different stages of a cluster lifecycle

In cluster upgrading government organizes relevant government departments around clusters; focus efforts to attract foreign investment and export promotion around clusters; eliminate barriers to local competition etc. (Economic Development Quarterly, 2000).

Finland's business environment and present economic situation

Finland is a stable, growing economy driven by high technology products and forestry industry. International transparency has constantly ranked Finnish economy among the least corrupted countries in the world, indicating good opportunities for establishing business partnerships with Finnish companies.

As a part of the European Union, Finland offers a gateway to 25 European Union Member States markets. Finland is connected to major European markets through networks of air, road and rail transport (Ministry for foreign affairs of Finland).

Finland has a highly industrialized, largely free-market economy with per capita output roughly that of the UK, France, Germany, and Italy. Its key economic sector is manufacturing - principally the wood, metals, engineering, telecommunications, and electronics industries. Finland excels in high-tech exports such as mobile phones. Except for timber and several minerals, Finland depends on imports of raw materials, energy, and some components for manufactured goods. (CIA World Factbook). Currency is Euro.

Finnish infrastructure excels in terms of physical transportation as well as telecommunications. Technology infrastructure is one of the best in Europe.

Finland has an efficient road and rail network, despite its only becoming fully developed in the mid-20th century. As late as the 1940s, difficult terrain and harsh weather had made internal communications and transport problematic. After World War II, steady improvements in infrastructure led to the current situation. By 1998, Finland had 77,895 kilometers (48,404 miles) of highways, including 473 kilometers (294 miles) of expressways. Bridges and car ferries assisted road travel in the lake-land areas and in the island archipelagoes. The gauge of Finnish railways is the same as Russia's, which enhances Finland's position as a trade gateway to the Russian region. However, Finland's 5,685-kilometer (3,533-mile) rail network is uneven, better serving the economically dominant southeast regions. Finland's sea communication and transport is extensive, with over 50 ports and loading places and 23 seaports open year round. Finland also has 157 airports and a state airline, Finnair. International air service is provided through Helsinki airport.

Finland produced 75.30 billion kilowatt hours (kWh) of electricity in 1998, of which fossil fuel comprised 41.62 percent, hydroelectric power 19.59 percent, nuclear

power 27.59 percent, and other sources 11.2 percent. Total consumption was 79.28 billion kWh in the same year, or over 15,000 kWh per person, almost two-thirds higher than the average per capita consumption for the EU. This is due especially to the long Finnish winter and the high energy consumption of the paper and pulp industry. Finland relies on nuclear energy and imported hydrocarbons for almost 50 percent of its power, while imported fossil fuels make up the rest. Finland exported only 300 million kWh of electricity in 1998, while importing 9.55 billion kWh.

Finland's telecommunications system is cutting-edge and extensive, with 2.86 million main telephone lines in 1997 and 2,162,574 mobile cellular phones. The half-state-owned Sonera is the main telecommunications provider as of early 2000. Finland is famous for its quick adoption of cellular phone and wireless technology. About 60 percent of Finns had mobile phones in 1999, compared with 28 percent in the United States. Nokia, along with dominating domestic mobile phone sales, also supplies almost a quarter of the world's mobile-phone market. Internet connectivity is also very high, with more Internet service providers (ISPs) per person than any other country in the world. The telecommunications industry was fully deregulated by 1995, and subsequent laws have allowed telecom companies to share lines and have eased entry into the sector by eliminating the licensing requirement previously needed to construct a fixed telephone network. Phone tariffs are among the lowest in the EU (Encyclopedia of the Nations).

Office space is increasing and is much more affordable than in many locations in Western Europe. There are several business districts in Helsinki. All of them provide the companies with a good business location and connections within the city and to elsewhere in Finland. Utilities are competitively priced and function well, as do society itself.

Support services offered to businesses are varied and of high quality. Finland's public sector provides quality healthcare, education, transportation, housing as well as cultural services. Finland is famous for its transparency, straightforwardness and low levels of bureaucracy. The international community is well-established with a strong presence in the city. Finland is the only Nordic country in the European Union using euro as its currency. Helsinki is one of the leading regions by the Regional European Competitiveness Index, scoring second after Brussels. The metropolitan

area has also seen an increasing amount of Foreign Direct Investment (FDI) (Helsinki business hub, 2011).

In the target status, economic growth is combined with the wellbeing of people and the environment. Increasing wellbeing requires the innovation-based, sustainably targeted improvement of productivity extensively in enterprises and other communities. The target status sees Finnish enterprises succeeding and growing on the international market due to their competitive strength which is a consequence of expertise, and the enhancement of their productivity. The public sector in Finland is also reforming its service systems and operating methods actively, by developing innovations (Finland's National Innovation Strategy).

Innovations improve productivity by reducing costs, enabling higher output with the same resources, or by creating new, added-value that customers are willing to pay for. The impact of innovation activities on productivity development is growing continuously in all sectors as they become more knowledge-intensive.

Innovation is largely based on research and development (R&D), which in turn requires a high level of training and education infrastructure as well as investments of time and money.

In the European Commission's TrendChart comparison, Finland ranks high among the innovation leaders, ranking fourth even in applying innovations (McKinsey&Company, 2007). Nevertheless, the commercialization of innovations is weak in Finland. For example, Finland produced an abundance of internet-related innovations since the 1980s, but their commercialization and business success took place mainly in the USA.

One cause for concern is that Finland does not entice international companies as a location for their R&D operations. Companies are increasingly focusing their interest, with regard to R&D also, on growing markets in China, India and Russia.

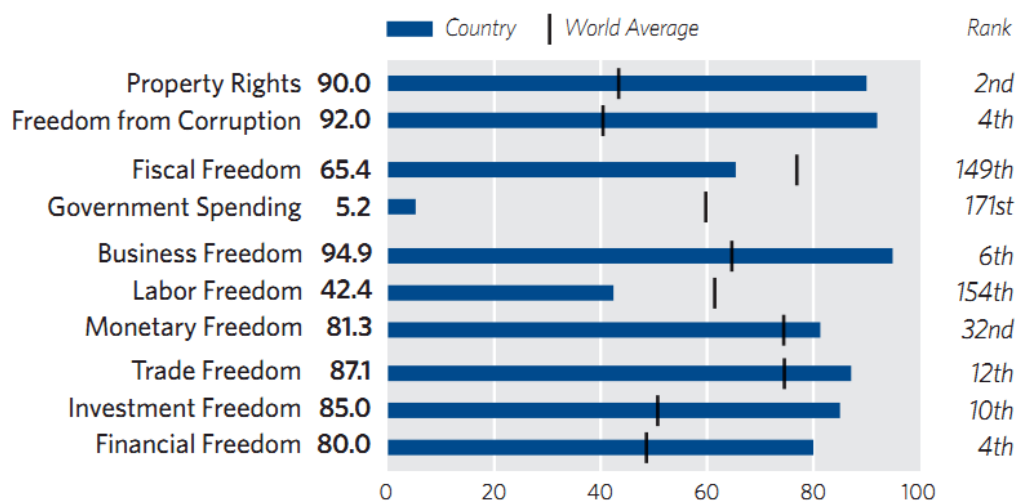
PESTLE analysis

Political factors

- Finland is a sovereign republic with a stable political system. The major parties are the Social Democrats (SDP), Centre Party and the National Coalition Party.
- Finland participates in international co-operation for the protection of peace and human rights and for the development of society.
- In 1994 Finland became a member of NATO's Partnership for Peace program and sits on the Euro-Atlantic Council but has not pursued full NATO membership because of its neutral military status (Index of economic freedom, 2012).
- In 1995 Finland joined the European Union and was one of the first-wave countries to adopt the euro on 1 January 1999 (European Commission).

Economic factors

Finland's economic freedom score is 72.3, making its economy the 17th freest in the 2012 Index. Finland is ranked 8th out of 43 countries in the Europe region, and its overall score is well above the world average (Index of economic freedom, 2012). The strong competitiveness of Finland's economy is built on openness and transparency. The quality of the legal framework is among the world's highest, providing effective protection of property rights. The rule of law is well maintained, and a strong tradition of minimum tolerance for corruption continues. Although public debt remains under control, respect for the principle of limited government has been seriously undercut by heavy public spending that amounts to more than half of total domestic output.



Picture 3. The ten economic freedoms of Finland

Social factors

The population of Finland is 5,4 million people. The population growth rate is 0,065% (2011). Birth rate is 10,36 births/1.000 population. Death rate is a little bit lower – 10,33 deaths/1.000 population (July 2011). Net migration rate is 0,62 migrant(s)/1.000 population (2011). Rate of urbanization is 0,6%. Major city is Helsinki with a population of 1.107 million people. Sex ratio of the total population is 0,96 male/female. The population consists of 6 ethnic groups: Finn 93,4%, Swede 5,6%, Russian 0,5%, Estonian 0,3%, Roma (Gypsy) 0,1%, Sami 0,1% (2006). Literacy of the population is 100%. Expenditures for the education make up 5,9% of GDP (2007).

The main languages spoken are: Finnish (official) 91.2%, Swedish (official) 5.5%, other (small Sami- and Russian-speaking minorities) 3.3% (2007) (Index Mundi, Finland's Demographics Profile 2012).

Technological factors

Finland invests in knowledge-based competence and aims to increase the overall standard of education. The Government Program stresses the role of research as the foundation of knowledge and know-how, which in turn promote sustainable economic growth and immaterial as well as material welfare.

In 2011, research and development expenditure represented 3.73% of the GDP, which puts Finland among the top in the European Union and the OECD. Of the

total Finnish R&D expenditure of about 7.2 billion euros, the private sector investments constitute 69%, universities 21% and research institutes almost 10% (Ministry of education and culture).

Environmental factors

Finland has a much milder climate than most other regions of the world that lie as far north. Finland's climate is influenced chiefly by the Gulf Stream, a warm ocean current that flows off Norway's west coast. Finland's many lakes and the gulfs of Bothnia and Finland help give the country a relatively mild climate.

Finland's principal environmental agency is the Ministry of the Environment, established in 1983. In 1993, the Finnish Council of State introduced new approaches to the control of water pollution. Lead-free gasoline was introduced in 1985. Care is taken to protect the flora and fauna of the forests, which are of recreational as well as economic importance. Closed hunting seasons, nature protection areas, and other game-management measures are applied to preserve threatened animal species.

Legal factors

International standards, laid down by, for example, the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC), the International Telecommunication Union (ITU) and the International Maritime Organization (IMO) promote international harmonisation, which contributes to the elimination of technical barriers to trade.

Private companies also develop standards which can evolve into *de facto* international standards. The WTO TBT Agreement /Technical Barriers to Trade) encourages members to use international standards as a baseline of their technical regulations. Such regulations are considered to be in compliance with the Agreement.

National clusters in Finland

According to research done by World Economic Forum in 2003, Finland was ranked first country in the list of Growth Competitiveness Index, and first place in Business

Competitiveness Index. U.S., Japan, UK were outrun by Finland. Russia had 71 position in this list, in 102 possible positions (World Economic Forum).

Cluster approach in an analysis of economical structure began popular in Finland after first using in industrial policy development in 1991 – 1993. Discussions about cluster approach had begun earlier, after the publishing of the Michael Porter's book "The competitive advantage of Nations" in 1990. Big research was made under the Porter's book. Final report of the research was published in 1995, named "Advantage Finland – The Future of Finnish Industries". This work examined structure, tendencies of development and perspectives of competitiveness of Finnish clusters (Portal of information support of small and medium industrial business).

Nowadays in EU Finland has the biggest number of companies developing clusters. Main national cluster agencies are (S. Record, 2010):

- TEKES, the Finnish Funding Agency for Technology and Innovation

It finances development of innovations that aim to growth and new business operations. TEKES funds R&D and innovation activities by companies and research organizations registered in Finland. In 2011 TEKES made funding decisions regarding 1,928 projects, which resulted in total investment of 610 million euros, of which: 349 million euros was invested in enterprise projects; 251 million euros was invested in projects carried out by universities, research institutes and polytechnics; 10 million euros was invested in projects launched by municipalities, cooperatives, societies and associations. Of the total of enterprise R&D project funding: 58% was targeted at SMEs; 73% was targeted at enterprises with less than 500 employees (TEKES);

- MTT Agrifood Research Finland

It is the leading research institute developing sustainability and competitiveness of the food system. They conduct research within five research areas which utilize the expertise of the entire organization. It operates under the Ministry of Agriculture and Forestry. MTT employs around 750 people at 15 locations across Finland. In 2011 their expenditure totaled approx.. EUR 56,7 million, of which 58 % was budget financing (MTT);

- SITRA, The Finnish Innovation Fund

It builds a successful Finland for tomorrow's world. They are forward thinking anticipate social change and its effect on people. Their activities promote and

stimulate new business models that aim for sustainable well-being. They report directly to the Finnish Parliament as well (SITRA);

- Academy of Finland

The Academy of Finland's mission is to finance high-quality scientific research, act as a science and science policy expert, and strengthen the position of science and research. The Academy funds research annually with 327 million euros (year 2012). Each year the Academy receives funding applications worth 1.1 billion euros. Funding is provided for research projects, research programmes, Centres of Excellence in research, research posts, foreign visiting professors' work in Finland, researcher training, international networking and research collaboration between universities, research institutes and business companies. Each year Academy-funded projects account for some 3,000 researcher FTEs at universities and research institutes (Academy of Finland);

- STAKES, National Institute for Health and Welfare

It is an expert agency whose key functions are research, development and statistics. STAKES offers expert services, consultancy and service products in the area of social welfare and health care. STAKES promotes welfare and health of the population and develops social and health services, assesses changes affecting welfare and health, evaluates the outcomes of welfare policy and brings forth new alternatives, strengthens welfare expertise in Finland. (STAKES);

- VTT, Technical Research Centre of Finland.

VTT is a globally networked multi-technological applied research organization. VTT provides high-end technology solutions and innovation services. They enhance their customers' competitiveness, thereby creating prerequisites for society's sustainable development, employment, and wellbeing. For 2011 VTT's turnover was 278 million euro (VTT);

- Research and Innovation Council of Finland.

It was chaired by the Prime Minister, advises the Government and its Ministries in important matters concerning research, technology, innovation and their utilization and evaluation. The Council is responsible for the strategic development and coordination of Finnish science and technology policy as well as of the national innovation system as a whole (Ministry of Education and Culture).

Comparing the views of Finnish and Russian enterprises

There are barriers and opportunities for cooperation between Finnish and Russian companies.

For Finnish enterprises barrier to cooperate differs quite much, from difference in mindsets to the lack of resources, especially for small companies. For Russians one of the main barriers is finding information, for example due to language barrier. Differences in legislation are also important.

Table 2 summarized the main findings of the interview study made by authors of the book “Potential for Enterprise cooperation between South-East Finland and North-West Russia” by 2006.

	Finnish companies	Russian companies
Motives	Market potential	Access to resources and know-how
Partner criteria	Company performance	Company reputation and personal relationships
Barriers	Lack of recourses	Access to information, language
Problems between partners	No major problems	Different mindsets
Problems of Russian business environment	Legislation, administrative control	Lack of financing, rising operation costs, corruption

Table 2. Views of Finnish and Russian companies on cooperation (Ivanova, Kaipio, Karhunen, Leppänen, Mashkina, Sharafutdinova, Thorne, 2006).

According to the Table we can see that the main motive of Finnish companies to enter Russia is scale of the market, by turn Russian companies are interested in foreign know-how and technologies. Russian enterprises gains from cooperation with foreign partners in rising reputation of the company, in turn a company performance is main priority for Finns. As it was said before differences in mindset can become a problem for both parties. Therefore Finnish specialists study features of doing business with Russia particularly, but Russians study just doing international business and do not concentrate much on Finnish features of business. Problems of Russian business environment are clear and unfortunately are not being solved fast. Quite much depends from the government policy.

Food industry in Southeast Finland

Processing of the food branch in Finland has developed mainly on the basis of local demand. In the mid-1990s Finland entered to EU and food industry faced new challenges in international competition. The collapse of communism in the former Eastern Bloc in 1989 and the dismantling of the Soviet Union in 1991 created new opportunities for the Finnish food processing industry, which were in part lost in the 1998 crisis.

In this work we are concentrated on Southeast Finland. According to a table 3 it is shown that in all three provinces the food sector is not a major industrial employer.

year 2003	Kymenlaakso		South Karelia		South Savo	
	Per capita	%	Per capita	%	Per capita	%
Gross value of production	1852	7,6	1082	4,2	927	8,4
Total number of hired personnel (per 1000 inhabitants)	7	8,0	6	7,0	6	8,6
Total value of investments	26	2,1	95	11,5	56	7,7
Total value of exports	100	0,8	74	0,5	17	0,4
Average monthly wage	1999	69,1	2203	81,3	1973	84,1

Table 3. Basic indicators of food industry, per capita (euros) and share (%) of whole industrial sector (Calculations based on Statistics Finland Internet database Tilastokeskus).

Despite of not fresh data it is interestingly that although South Karelia has the smallest food industry share, its investments in the industry are clearly highest in both per capita and share of whole industrial production terms (Ivanova, Kaipio, Karhunen, Leppänen, Mashkina, Sharafutdinova, Thorne. 2006). This tendency is kept till the present time. To South Karelia are put quite a lot of investments, mostly because of the popularity of this region between Russian tourists.

In South Karelia farming enterprises are developed as well. For example in the S-group (S-market, Prisma) and K-group (K-market, Citymarket) the produce of

farming enterprises (i.e. meat) are sold regularly. Big chocolate factory Fazer is located in Lappeenranta.

Food sector products in all three provinces are mostly consumed domestically. The international demand for products sold in Southeast Finland is high nowadays as well. To develop a cluster in the food industry first of all we should concentrate on the level of consumption in the region. Main consumption audience of food products in Southeast Finland are Russian tourists.

Finland's export of food products to Northwest Russia is quite high now. For example Valio is very popular brand of milk products in Russia. Finland produces Valio's products separately to Russian market.

Nowadays consumer focus is shifted from low cost goods to more expensive but higher quality goods. Quality of food products is increased. Finland is a country known by quality of its goods, particularly in food industry. Health, sport and wellbeing are important for Finns. Most part of Finns tends to feed healthy and high-quality. Though they buy often "Luomu" goods (organic, Finnish), even it is more expensive than food produce of other manufacturers. Finns maintain national producer as well, because they are sure in a quality of goods. Last time Russians are interested in buying of good quality goods as well, and they are ready to pay more for good quality. Variety of food products is also important. Finns are not observed like a nation who likes variety, but big part of Russians are so kind of people. Therefore it is important to develop new kind of food products.

All above mentioned proves that Northwest Russia, particularly St. Petersburg and Leningrad region, is priority region for Finland to develop transborder clusters in food industry. The economy of both regions can be developed, countries may accelerate mutual investments in perspective project, and both countries gain from this cooperation. The major part of Finnish production capacities, particularly in food industry, is situated in Northwest Russia already (i.e. Atria).

Factor Analysis: opportunities and constrains for the Food industry transborder cluster to grow. Advantages and challenges of a cluster approach

The experience of cluster development in Finland has important significance for the economy of Northwest Russia, because there are premises for developing clusters in

this region. There are many opportunities for Finnish-Russian clusters' creation, based not only on exchange of resources and technologies, but creation of trans-border clusters. Investing and business climate, including competition development, promotes development of existing cooperation and creation new ones. It will bring competitiveness' forcing and stable developing of Northwest Russia's economy.

Main opportunities for trans-border cluster to grow are:

- Short distance between South East Finland and North West Russia;
- North-West Russia is large region with high level of consumption. Population of whole Finland is 5 387 000 habitants (Statistics Finland, 2011). Population of North-West Russia is 13 462 000 habitants (Federal State Statistics Service, 2009). Therefore this region of Russia possesses a large food industry market. There are free niches for Finnish food producers;
- Russia is low productivity country. Food industry's production is not so poor comparing with some other industries, however there is a lack of local food producers for this big market;
- A part of Russians do not trust to the food quality of national producer. Quality of Finnish food produce is high. Therefore there is demand to foreign producers;
- Low costs of production and labour force comparing with Finland. Taxes, communal outgoings are lower as well. Russia is known by affluence of raw materials and export cost is lower than in other European countries;
- Long-term well-established relations between South East Finland and North West Russia despite of wars in 20 century and conflicts concerning the territories. Governments of both countries try to develop relationship between regions in moderation;
- Finland invests to Russian language and culture's maintenance as well. For instance children of Russian immigrants living in South East Finland can study native language and culture free of charge. Finnish government maintains immigrants first 3 years, particularly Russians. In the higher education institution the focus on Russian trade and language is studied as well. Therefore nowadays there appeared more and more Finnish specialists who know Russian know-how and migrate to Russian for work, on the contrary as well;

- Tourism sphere is developing all the time. There is an agreement in simplified issuance of a visa in regions For Russians and Finns. Therefore demand for food produce is increasing.
- Development of region economies on the clustering route stimulates increasing of capital flow, technologies and direct investments. All these things bring additional new technologies, financial and intellectual resources, and world-famous trade brands to the region;
- Finland is one of the main investors in St. Petersburg and Leningrad region. Finland gains also owing to recent entry of Russia to WTO (2012).

To main constrain we can attribute following:

- There is high level of corruption and bureaucracy in Russia. Despite of that fact that quite high level bureaucracy exists in Finland as well, it is stronger in Russia;
- Finland is a member of EU and EU's regulations should be taken into consideration in creating trans-border cluster;
- Increasing amount of foreign competitors, for instance from other European countries. North West Russia is a big region and there are a lot of people who like variety in food. Therefore competition is rising and going to be more severe;
- Big investments are being done into a region and not all investments are legitimated expectations (Master students' scientific papers, 2011. p. 67);
- Russian language is second challenge to enter Russian market and operate there successfully. For sure last decades Russian began more popular language to study in schools and universities in South East Finland, and hopefully the situation in future will be improved. Usually Russians do not know English or Finnish languages as well. English is not used much in Russia, and quite many adult specialists in Russia have lack of English language knowledge. It is a barrier and challenge to cooperate. For sure the situation in Russia will change in future as well, because quite many young specialist know English and are more qualified to modern market policy and tendencies, but adult and old specialists does not let the a possibility to enter deeper to managing positions;
- A difference in mentalities is quite big challenge;

- Different kinds of political and economic risks. Russian rouble is not steady currency and depends much from dollar and euro, as many other currencies;
- R&D policy is not developed well, especially it is not targeted into modern market tendencies;
- Legislative obstacles and difference in Russian and Finnish legislation (Master students' scientific papers, 2011. p. 68).

Importance of production cooperation for the competitiveness of Southeast Finnish enterprises in Food industry

The potential of Northwest Russia for the Finnish food industry lies in the growing consumer demand. Competition in this field has also intensified in recent years. The 1998 devaluation of the rouble gave a boost to local food production and increased the incentive for foreign food companies to invest in local production. Consumer attitudes towards local products have turned more positive after the early 1990s euphoria where all imported goods were considered superior as well. Therefore, the most relevant business options for Finnish food companies have changed from export to local production. Positive examples of such kind of investments are Fazer, Atria and Hartwall (Ivanova, Kaipio, Karhunen, Leppänen, Mashkina, Sharafutdinova, Thorne, 2006).

In the food industry cooperation with a Russian firm with a strong brand would be an advantage. Therefore large enterprises have made foreign direct investment in food production in Northwest Russian. Finnish food products have traditionally has a good reputation in Russian, and Northwest Russia, especially St. Petersburg, has a large number of potential consumers with incomes high enough to purchase such goods.

Of course for most Finnish companies, particularly Finnish food producers, relatively small size is a problem when entering the Russian market. Although the undervalued rouble provides an incentive for foreign investors, small companies lack resources to utilize this advantage. Therefore production cooperation might provide a solution for this. Finnish food producers could tackle the problem of small size by joining forces in marketing their products in Russia as well.

Finnish food producers could bring production technologies to the venture and the Russian could use its knowledge of the local market in sales and distribution. Focus on niche products, positioned in the high-end segment of the market is another

option for Finnish food producers (Ivanova, Kaipio, Karhunen, Leppänen, Mashkina, Sharafutdinova, Thorne, 2006).

Cluster Analysis (supply chains, access to resources, demand and supply)

Finnish food and drink industry is a well-known force on international markets, especially in the Baltic Sea area. The strength of the Finnish food and drink industry is based on knowing the expectations of customers and consumers. The products are tasty and convenient.

Successful products and trustworthiness are the result of the strong integrity of food and drinks industry professionals. Quality is further guaranteed by innovative product development and advanced production technology. Close and transparent cooperation across the food processing chain ensures a supreme standard of food safety from raw ingredients to the finished products. Corporate social responsibility policies and a commitment to environmental friendliness are the cornerstones of the Finnish food and drink industry that ensure sustainability far into the future.

Finland's food and drink industry is among the best in the world in the development of functional food products. The best known Finnish health innovations include tooth-friendly xylitol, lactic acid bacteria preparations designed to promote a healthy gut, and products intended for controlling cholesterol.

Facts about the food industry:

- The food and drink industry is the fourth biggest industry in Finland after the metal industry, forestry, and the chemical industry.
- The gross production value of the food and drinks industry is EUR 10.2 billion. The value added is EUR 2.4 billion.
- Food and drink industry exports were valued at EUR 1.6 billion in 2011 and imports at EUR 4,0 billion.
- The three largest food and drinks industry sectors – meat processing, dairy farming, and the bakery industry – represent 50% of the industry's gross production value.
- The food and drink industry employs more than 32 500 people. The number of individual facilities is approximately 1 900.

- Eighty-five percent of all raw ingredients used in the food and drinks industry originate from Finland.
- The Finnish food and drink industry invests more in research and development than most other countries in Europe: 2.6 percent of the production value in 2010.
- The entire food processing chain employs approximately 300 000 people in Finland, which is around 12 percent of the employed workforce (Finnish Food and Drink Industries' Federation)

Russia is now a burgeoning market for three thousand Finnish companies, many of them small and medium-sized companies.

In the 1970's and 1980's, when Finland was the Soviet Union's largest Western trading partner, exporters from other countries tried to enter this lucrative market by using a Finnish partner. However, Finland's bilateral trade agreement with the Soviet Union - a high-level government agreement, which was very favorable for large Finnish companies, and therefore jealously protected - required 85% of the exported merchandise to be Finnish in origin. After the collapse of communism and the Soviet Union, Finland's exports collapsed, and contributed to an economic depression. The large companies had based their business on contact with Moscow's central bureaucrats; not with a market which suddenly had thousands of small buyers. The smaller companies understood this environment. By concentrating on St. Petersburg, - just a few hours by car from the Finnish border - the smaller companies learned quickly what was needed and how to meet those needs. The St. Petersburg area has approximately seven million people; Finland has only five million people. The market is interesting. The Russians have an acute need for Western consumer products and production equipment. There are enormous opportunities (Reino Routamo).

So Finland and Russia continue to develop their partnership and nowadays there are already lots of linkages between these two countries:

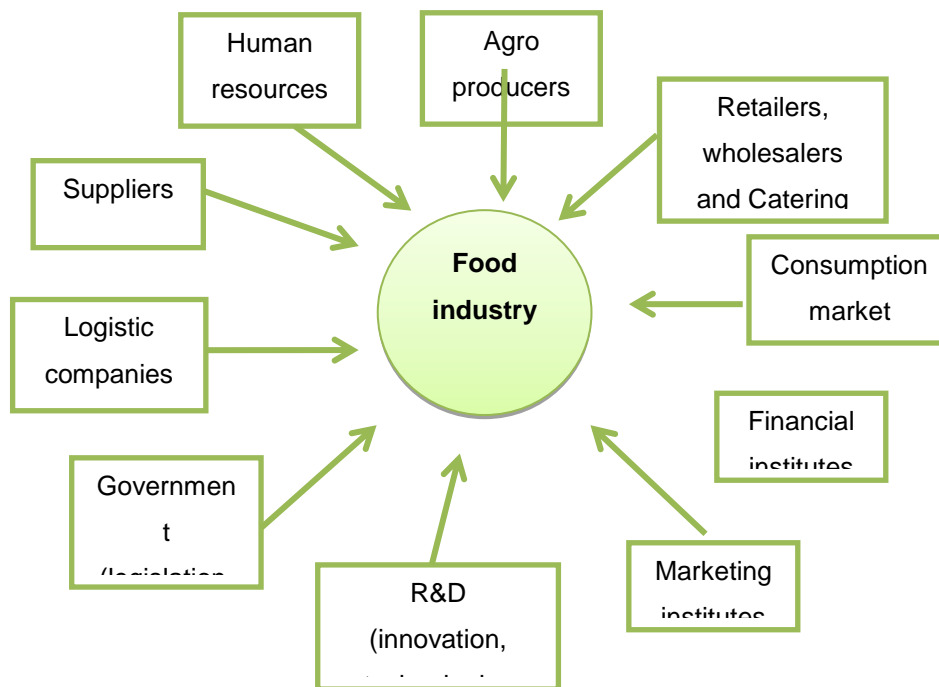
- The Finnish-Russian Innovation Centre, opened in early 2008 as a joint initiative of Finnish Ministry of Employment and the Economy "FinNode Russia", educational institutions and business development companies of Lappeenranta-Imatra region, including Lappeenranta City Holding Company

Ltd. with technical assistance of Technopolis Plc. Innovation Centre, provides a platform for national innovation strategies. The opening of the Innovation Centre demonstrates a tangible result of cooperation among “St. Petersburg Corridor the Heart of Northern Dimension”, the regional partnership between Southeast Finland, the City of St. Petersburg and the Leningrad Region (Finnish-Russian innovation centre).

- Kotka-Hamina region. Excellent transport connections and a location between Helsinki and St Petersburg render the region easily accessible. The efficient ports of Kotka and Hamina reflect the excellent logistics expertise of the region. A full spectrum of logistics services is available in the Kotka-Hamina region (Access via Finland).
- Lappeenranta is a popular international tourist destination and university city with first-class rail, air and road connections. The city's excellent logistics location and good networks make Lappeenranta a valuable meeting point with a great variety of activities on offer. Lappeenranta is a city of about 72,000 inhabitants in South-Eastern Finland, on the border between the European Union and Russia.
- Mustola. Port of Lappeenranta & Lappeenranta Free Zone Ltd Mustola has direct railway and highway connections, 9 kilometres to the city centre and to the international airport, and 20 kilometres or a 15-minute drive to the Russian border (Nuijamaa border crossing station) (Access via Finland).

Cluster map in food industry

Many players can be involved in food industry cluster, first of all human resources, agro producers, logistic companies, suppliers, government etc. Below there is a cluster map where it is indicated main institutes which can be involved in a cluster.



Picture 4. The cluster map in food industry

Main players in Finnish food industry. Role of these enterprises

Main players in the food industry are food and agro producers, retailers, logistic companies, R&D institutes, chemistry companies, hotel restaurant and catering.

Main food producers and retailers

- *Arla Ingman* is the second largest dairy company in Finland. The company offers a broad line of dairy products and its market share is approximately 22 %. The company provides modern consumers with natural milk-based products and develops products that will provide the consumers added health benefits and lactose-free milk for people who are sensitive to lactose.

- *Atria Plc* is a powerfully growing and internationalizing Finnish food-industry company. It is the largest meat processor in Finland in terms of turnover, and one of the leading food industry companies in the Nordic countries, Russia and the Baltic region.
- *The Fazer Group* offers meals, bakery products and confectionery, and it operates in a total of eight countries. The Group has two business areas: 1. Fazer Amica - A leading contract catering company in the Nordic and the Baltic countries; 2. Fazer Bakeries ja Confectionary - Fresh and tasty bakery products in Finland, Sweden, Russia, Estonia, Latvia and Lithuania. It is Finland's leading confectionery company and a strong player in the Baltic Sea region.
- *Oy Hartwall Ab* is the innovative leader in the beverage industry. The product portfolio includes beers, ciders, long drinks, bottled waters, soft drinks and a growing variety of speciality beverages. Hartwall is part of Heineken N.V.
- *HKScan* is one of the leading food companies in northern Europe with home markets in Finland, Sweden, the Baltics and Poland. HKScan manufactures, sells and markets pork and beef, poultry products, processed meats and convenience foods under several well-known local brand names. Its customers are retail, the HoReCa sector, industry and export customers. HKScan is active in nine countries.
- *Lännen Tehtaat Group*. The business operations of the Lännen Tehtaat Group consist of the Frozen Foods business, the Seafood business, the Grains and Oilseeds business and Other Operations.
- *Paulig Group* is an international family-owned enterprise in the food industry noted for its high-quality brand products. Its key business sectors are coffee, spices and ethnic food products. Paulig's products are enjoyed by millions of consumers in more than 40 countries. The company is strongly placed in the Nordic countries, the Baltics and Russia, and its brands are leaders in many European countries.
- *Valio* is the leading dairy brand in Finland and strongly positioned in neighbouring countries Russia, Sweden and the Baltic States with subsidiaries

in the USA, Belgium and China, too. Valio also commands global sales in the ingredients sector (ETP Food for life Finland).

- *A few central wholesalers (S-Group, K-Group, Suomen Lähikauppa, Stockmann Group, LIDL) together dominate the food industry with an aggregate market share of 87.6%. These chains have closely knit wholesale and retail arrangements comprising a compact and efficient goods delivery system and a nationwide network of retail shops as well as department stores and supermarkets. They also have hotel and restaurant chains and catering services. The centralized system makes distribution economical; purchases from abroad can be made in viable quantities considering the relatively small size of the market. Almost one-third of the total wholesale trade in Finland is transacted through these wholesale organizations (Retail Food Sector Report for Sweden and Finland, 2010).*

Main R&D institutes

- *ETLA, the Research Institute of the Finnish Economy, is the leading private economic research organisation in Finland.*
- *Folkhälsan Research Center* represents an internationally renowned unit with the focus on biomedical and health promotional research.
- *MTT Agrifood Research Finland.* MTT's biotechnology and food research develops by means of breeding methods production and quality traits of plants and animals improves quality and healthiness of foods, studies plant and animal genetic resources and develops the ecological sustainability of food production.
- *National Consumer Research Centre* - R&D on food economy and food culture.
- *The National Institute for Health and Welfare.*
- *Pellervo Economic Research Institute.* PTT Projects in the field of food production include the impacts of EU enlargement and international trade on the Finnish food industry and the impact of export subsidy elimination on the dairy sector.

- *VTT*. Technical Research Centre of Finland VTT has comprehensive expertise in biotechnology and food technology (ETP Food for life Finland).

4.1 Main chemistry companies

- *Finnish Chemicals Oy* is a global supplier of chemical solutions and intermediates to broad range of customers including those in the pulp and paper, life sciences, chemical, crop protection and water treatment industries.
- Huhtamäki Van Lear Group is one of the world's largest packaging companies and the leader in several segments of rigid and flexible packaging for consumer goods, food service, and fresh food.
- Noviant is the world's largest producer and marketer of the most widely used cellulose ether, carboxymethyl cellulose (CMC). The company delivers CMC worldwide to food, personal care, pharmaceutical, paper, oil drilling and detergent industries and also to a variety of other industries.

Hotel, Restaurant and Catering

Hotel, restaurant and catering sector (HoReCa) is dominated by small enterprises in Finland, covering 9 500 enterprises in 1995 with 41 000 persons employed (Eurostat 1998b). The contribution of the HoReCa sector to the Finnish national total value added is about 1.7% (Petri Bockerman, 1999).

Main logistic companies

- *Nurminen Logistics* provides high-quality logistics services, such as railway transports, terminal services, forwarding, special and heavy transports and value added services. The company has collected logistics know-how from three centuries, starting in 1886. Its main market areas are Finland, the Baltic Sea region, Russia and other Eastern European countries.
- *Goodpri Oy* is a team of professionals working in logistics since 1990. Delivery of goods in any direction around the globe. The company is located in the territory of its own customs terminal, close to the border of Russia.
- *CHS Logistics* is a privately owned Finnish logistics company operating in international logistics from all over the world to Finland, Russia and Russian

speaking countries, warehousing, supply chain management and forwarding services.

- *DFDS Logistics Finland* are specialists in the door-to-door trailer services - especially in corridor between Finland, Belgium, France and Spain.
- *VR Group* is a broad-based Finnish transport company. They serve freight service customers and public transport customers with rail and road transport services, provide safe, high-quality and environmentally benign transport and logistics services.
- *SA-TU* is a privately-owned Finnish logistics company with over 20 years of experience in providing logistics services. The company name is an acronym of two Finnish words meaning harbour and customs clearance.
- *Itella Logistics* provides service logistics solutions for road, sea and air freight, warehousing and other contract logistics. Its service network consists of over 30 offices in eight European countries and in Russia.
- *KWH Logistics* consists of business units: KWH Freeze (Cold Storage) is Finland's leading commercial cold storage company with cold storage facilities in Vantaa and Inkoo. Backman-Trummer Group (Port & Sea and Freight Forwarding) operates in the fields of port operations, freight forwarding and international transports. The Group is present at 10 Western Finland ports.

Conclusion

The aim of the work was to examine opportunities for developing trans-border clusters between Finland and Russia, particularly its border regions, Southeast Finland and Northwest Russia.

For this purpose the detailed research of Finland according to Michael Porter's Institute for Strategy and Competitiveness was held, Finland's business environment and national competitiveness were examined and factor, cluster and PESTLE analysis were made, some basic information about clusters was studied as well.

As the result we came to the following conclusions:

- Clusters allow national fields to develop and maintain own competitive advantage;

- Thanks to clusters development the related technologies, infrastructure, human resources etc. are being developed and increased between border regions intensifying competitive advantage of regions in both countries;
- International competitiveness of a country increases as well;
- Cluster approach helps small enterprises to survive on globalized markets under severe competition and increasing international competition;
- Nowadays in EU Finland has the biggest number of companies developing clusters;
- Northwest Russia, particularly St. Petersburg and Leningrad region is priority for Finland to develop trans-border clusters in food industry. The economy of both regions can be developed, countries may accelerate mutual investments in perspective project and both countries gain from this cooperation;

The survey conducted proves that the experience of cluster development in Finland has important significance for the economy of Northwest Russia, because there are premises for developing clusters in this region. There are many opportunities for Finnish-Russian clusters' creation, based not only on exchange of resources and technologies, but creation of trans-border clusters. Investing and business climate, including competition development, promote development of existing cooperation and creation of new ones. It will bring forcing of competitiveness and stable development of Northwest Russia's economy.

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