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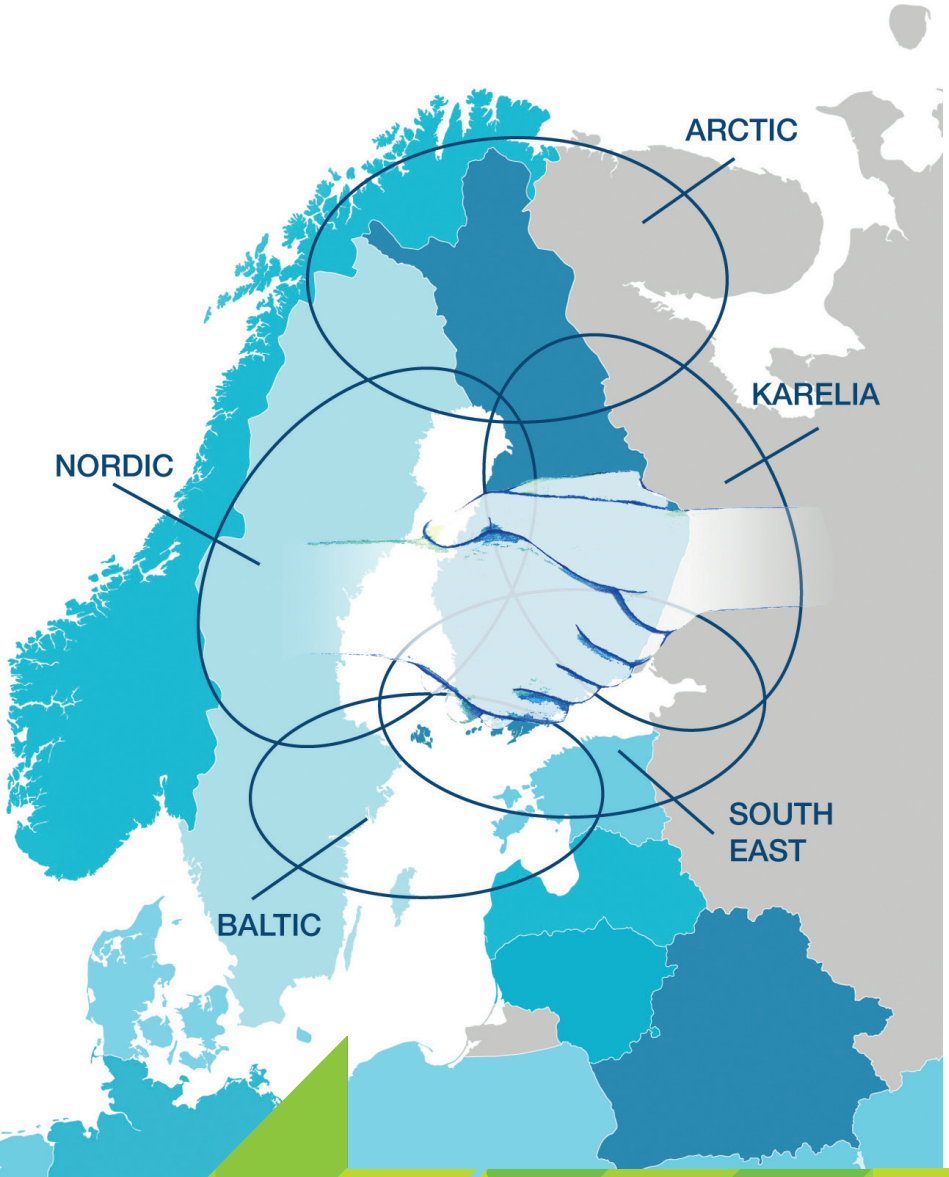
Yuri Saveliev, Nikolay Kolesnikov, Egor Mikhel

Prospects for cross-border cooperation in the Republic of Karelia

From borders to shared space - BOSS Report



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Prospects for cross-border cooperation in The Republic of Karelia

From borders to shared space - BOSS

Yuri Saveliev, Nikolay Kolesnikov, Egor Mikhel

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Foreword

The project From Borders to Shared Space – BOSS strengthens the cooperation between universities of applied sciences and the working life in border districts. This is realised with the help of new implementation models within research, development and innovation. The objective is to build a steadily developing RDI partnership network for border districts and to discover new operations models for the cooperation between universities of applied sciences and the working life, together with seven other universities of applied sciences operating in geographical border districts. Karelia University of Applied Sciences focuses on the border districts of Russia. The districts of the Republic of Karelia and the south-eastern metropolis of St Petersburg are its special focus areas. The duration of the project is 1 January 2014 - 31 December 2015. The Finnish Ministry of Culture and Education is funding the project.

The defined development objectives for the Russian focus area are the development and commodification of services and expertise. Additional factors in strengthening the expertise are consumer behaviour and networking competence. Karelia UAS manages several operations that are realised in cooperation with Russian universities and businesses as well as their support organisations. These organisations refer specifically to administrative entities that enable unrestricted progress with various actors in Russia.

In the BOSS project, Russia expertise includes native students' participation in project studies with commissions from interest group partners, key partners, operational partners, and alumni. The BOSS project enables expert exchange in order to strengthen networks and to increase mobility. The objective is also to implement productive, efficient RDI cooperation models that strengthen working life-oriented operation. For obtaining a better understanding of the present and future cross-border cooperation with the Republic of

Karelia there was a need to study the area. On behalf of the BOSS project, we wish to thank the project partners from the Karelian Research Center of Russian Academy of Sciences for the support and the implementation of the research.

Joensuu 16.1.2015

Ekaterina Miettinen
Project manager
Karelia University of Applied Sciences

Annotation

The study presents the modern and future trends of social and economic development of the Republic of Karelia. The main results of the analysis of demographic processes, labor market development and the social sphere are presented on the basis of relevant statistics. One of the main results of the study is the characteristic of economic development of key industries with providing general information on largest enterprises. The paper presents new directions of socio-economic development of the Republic of Karelia through the use of scientific, technical and natural potential of the Republic of Karelia. The great importance in the study is paid to cross-border cooperation in the economic and social sphere.

1 Analysis of the Socio-economic Development of the Republic of Karelia

The Republic of Karelia is situated in the Northwest of Russia. The area of The Republic of Karelia is 180,5 thousand km2 (1.0% of the territory of the Russian Federation). Its length from north to south is 660 km, from west to east on the latitude of the town of Kem its length makes 424 km.

The Republic of Karelia borders on Finland in the West, on Leningrad and Vologda regions in the South, on Murmansk region in the north, and with Archangelsk region in the east. In the North-West the Republic is washed by the White sea. The western border line of Karelia coincides with the state border of the Russian Federation on Finland and is 798 km long. Distances from the city of Petrozavodsk, the administrative centre of the republic, to Moscow makes 925 km, to St.-Petersburg – 401 km, to Murmansk – 1050 km and to Helsinki – 703 km.

As of January 1, 2014, population of the Republic of Karelia consisted of 634,400 people. Urban population share was 79.2%. In 2013 the share of the population younger than working-age age has made 16.7%, working-age population has made 59.2%, people older than working-age have made 24.1%. Population density of the Republic of Karelia makes 3.5 people per km2 (The Republic of Karelia 2014).

The Republic of Karelia is one of the 11 regions of the North-West Federal District of Russia. In terms of socio-economic development in 2013 the Republic of Karelia included in the group of regions with the highest values for the following parameters: average level of pension - 11,226.0 rubles (4th place) and the cost of a fixed basket of goods and services - 10,286.2 rubles. (5th place).

Among the regions of the North-West Federal District Republic of Karelia has one of the lowest levels of development in terms of: the number of population - 636.9 thousand. (9th

place), the number of employed 306.9 thousand. (10th place), the level of salaries - 24795, 8 (6th place), the number of pensioners per 1000 population - 369 people (1st place), per capita income – 20 037.0 rubles. (5th place), gross regional product - 223 000 rubles. (9th place), the growth of the production index - 100.4% (7th place), investments in fixed assets – 32097.4 millions rub. (10th place), foreign investments - 150 571 thousand of US dollars. (8th place), retail trade turnover – 78438.8 millions rub. (8th place), (Regions of Russia 2013).

Positive dynamics of the socio-economic development of the Republic of Karelia during the period from 2008 to 2012. fixed by the following indicators: reduction of total unemployment, wage growth, gross regional product in rubles, housing construction, investment in fixed assets, the retail trade and services turnover.

The negative dynamics is observed in: reducing the total population, increase in the number of pensioners, reducing foreign investment (Statistical Yearbook 2014).

1.1 POPULATION, LABOR MARKET AND SOCIAL SERVICES

One of the most important factors of socio-economic development of the region is population. Number, age and sex characteristics, as well as quality evaluation of labor potential has a direct impact on the prospects for socio-economic situation of the region. From this perspective, we consider it is important to present the main trends of population reproduction and its labor potential in the Republic of Karelia in order to justify the possible projects for the development of border areas in the framework of international cooperation.

Population and labor market

Unfavorable demographic situation in the Republic of Karelia for over 20 years continues has a negative impact on the regional labor market, due to the growing shortage of labor. Labor shortages due to the decline of economic-active population, who are ready to work.

There is annual population decline in the Republic of Karelia according to official statistics (see the table 1.1.1).

Table 1.1.1. *The population of the Republic of Karelia in 1990-2013 (thousands), (Statistical Yearbook 2014)*

Year	Total population	Annual growth			Population of working age	Economically active population
		General	Natural	Migration		
1990	791,5	-0,26	2,49	-2,75	457,0	no data
1995	763,4	-7,33	-6,11	-1,21	445,1	no data
2000	728,8	-6,65	-5,71	-0,94	450,4	381,0
2005	676,0	-13,55	-5,69	-7,86	434,3	371,9
2010	642,6	-6,13	-2,66	-3,47	392,5	348,4
2011	643,6	-2,90	-1,75	-1,14	384,6	339,1
2012	639,7	-2,74	-1,77	-0,97	376,9	330,0
2013	636,9	-2,53	-1,73	-0,78		328,1

The Republic of Karelia lost 154,6 thousands people over the past 23 years. This corresponds to a total population decline of 19,5 % and a working age population decline of 80,1 thousands people (17,5%).

Two processes have a major role in reducing the labor potential of the region: natural and migration-induced decline. Natural decline aggravated by the high mortality rate among men of working-age, whose age in Karelia is lower in than in non-northern Russian regions: 55 years for men in Karelia, 60 years in Russia. The level of out-migration from Karelia to other regions of Russia has in recent years been the same as the natural population decline.

The natural growth of the population in 1990 and 2010 in municipalities of the Republic of Karelia can serve as an illustration of changes in the demographic situation. The rates of natural population growth decreased in most municipalities and became negative. The exception is The Kostomuksha Municipality, with its rather young population structure due to its appearance in 1983 near new big mining enterprise, which required a lot of migrants. The spatial distribution of the natural growth of population in 1990 and 2010 is shown in Fig. 1.1.1.

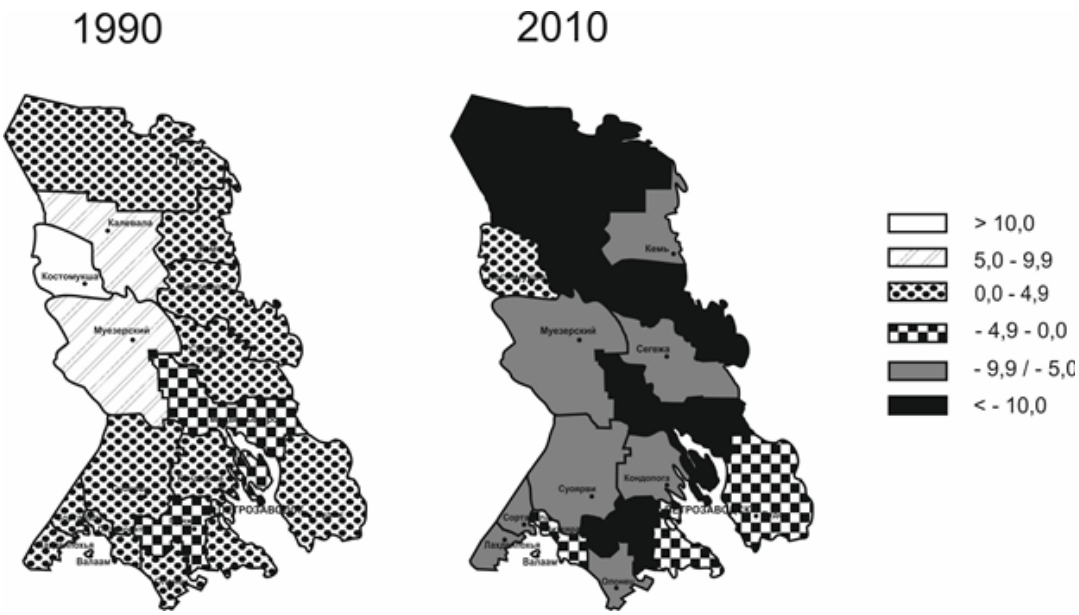


Figure 1.1.1. *Total rates of natural population growth in municipalities of the Republic of Karelia in 1990 and 2010 (per 1 000 people), (Mikhel et al. 2013)*

Despite some improvement in the dynamics of death rates in recent years, the demographic situation should be assessed as extremely unfavorable. Death rates continue to be high and, coupled with low birth rates, generate high demographic and socio-economic risks for development of the territory (Molchanova 2012).

Particular attention should be paid to gender differences in death rates of the working age population (Fig. 3). Death rates of men of working age are 3-4 times higher than those of women This fact reflects both the demographic and social disadvantages: social dependency, lumpenization of local communities, alcoholism, which are more common for male and leads to an increase in their mortality. These processes are mostly generated by the lack of work and low-income of population in rural areas.

Migration also plays an important role in the reproduction of the labor potential of the area along with the natural change of the population.

During past 20 years all municipalities of The Republic of Karelia except Petrozavodsk and Prionezhskii District are characterized by very intensive out-migration, increasing from south to north (Shishkin et al. 2011).

Most migrants in 2011-2012 left Karelia to St. Petersburg (1433 and 1359 people), The Leningrad Region (490 and 430), Central (361 and 467) and Southern (48 and 63) Federal Districts of Russia. There was a minor migration into the Republic of Karelia from the The Arkhangelsk Region (106 and 69), The Murmansk Region (4 and 81), The Vologda Region

(47 and 61), as well as from the The Northern Caucasus (49 and 73), Volga (98 and 27), Ural (20 and 1), Siberian (82 and 26) and Far Eastern (41 and 58) Federal Districts. The positive balance of international migration is formed by the population exchange with CIS countries: Ukraine (148 and 211 people), Azerbaijan (140 and 126), Armenia (129 and 218), Tajikistan (97 and 183), Uzbekistan (47 and 121) and others (Migration in The Republic of Karelia 2013).

Inside Karelia, migration surplus emerged in Petrozavodsk (3292 and 3843 people) and Kostomuksha (1 and 57). During 2011-2012 the migration surplus changed to migration loss in Prionezhsky (216 and - 82 people), Pryazhinsky (359 and -120) Districts, and Sortavala Municipality (4 and -222). There is a negative migration balance of about 200-600 people a year in other municipalities of Karelia. The most significant outflows are in Kondopoga, Loukhi, Pudozh and Segezha districts (Migration in the Republic of Karelia 2013).

Migration as a socio-economic phenomenon has acquired a dual character in The Republic of Karelia. On the one hand it has a "drain effect" on the labor force, as there is an outflow of working-age population with high professional qualifications from the region, which is an almost irreplaceable loss for the labor potential. On the other hand, migration has a "substitution effect" of the labor force, as less educated workers migrate into the region to occupy low-skill jobs. As a result, regional and local labor markets began to experience a shortage of skilled workers and a surplus of low-skilled.

The main reasons for the negative migration balance are economic and social factors: limited opportunities for professional growth and obtaining a degree in the place of residence, the lack of suitable employment, low level and quality of life, poor social infrastructure and others.

The next issue of the demographic development of the Republic of Karelia is the aging of the population. In the 2011-2013 along with slight increase of people below working age there is increasing of population over the working age. As a temporary solution in case of labor shortages caused by negative demographic trends, can be attracting the retirement age population and other non-competitive groups the labor market (people with disabilities, women with children, early pensioners). The other side of the employment of these groups is the gradual obsolescence of their skills and competencies. Also their skills in the fast-changed modern world becomes less productivity and efficiency (Analytical note 2014).

Thus, analysis of the impact of demographic factors shows that currently unfavorable demographic situation adversely affects the supply of labor in the labor market. Capacity of local labor resources declining annually. Statistical projections for today do not allow to believe in a significant change in the current demographic situation in the Republic of Karelia. In case of natural decline of population share of external migration is not significant. Migration potential of rural areas in the Republic of Karelia is exhausted.

In the current the shortage of working staff enterprises have to compete for high-quality (highly skilled) labor. They have to create attractive working conditions, invest in the mod-

ernization, increase productivity, improve efficiency. Increasing of demand in labor force will continue in the future.

In this case the Republic of Karelia has no other way to increase resources work as stimulating the inflow of working age migrants from within and outside (from the regions of Russia, CIS and foreign countries), as well as to improve quality of the employment potential of the local population.

More efficient usage of the labor potential of the local population may be associated with the development of the qualitative characteristics of the employment potential: professional education, training, territorial mobility within the Republic of Karelia (Mikhel et al. 2013).

The analysis of the reproduction of the population and its labor potential allows to state that the main challenges for the socio-economic development and international cooperation are the decline of local population, its aging and migration outflow from the Republic of Karelia, as well as low levels of social, employment, educational and spatial mobility in the Republic of Karelia. They reduce both quantitative and qualitative indicators of labor potential of the Republic of Karelia. Particular importance of these issues are in the northern and border municipalities of the Republic of Karelia.

Social services

Current demographic trends in the Republic of Karelia lead to changes in the age, gender and social structure of the population. In terms of depopulation, aging and migration outflow of young the proportion of the elderly population people is growing in the Republic of Karelia, especially in rural areas. At the same time there is growth in the share of the population with serious forms the disease. Shorter life expectancy for men increases the proportion of single women who need additional social assistance and support.

Decline in economic activity of enterprises in the Republic of Karelia (mainly in rural areas) for the last 25 years contributes to the formation of destructive forms of social dependency of the local population of working age.

All this circumstances lead to an increase in the share of persons and families with social risk which need in providing a whole range of social services.

High demand for social services is not always finds satisfaction because of the limited supply of such services in certain areas. Insufficient supply of social services due to both the lack of social infrastructure, lack of the required number of qualified social workers, and low-budget financing of the social sphere. All this facts characterize the current state of social policy in the region.

Currently part of the social services operate by family members, friends, neighbors, volunteer organizations. However, this support does not have a systematic framework and can not be considered as one of social policy component in the Republic of Karelia.

The main types of social services are the following:
» social (cleaning, delivery of products, goods, cooking, transportation, etc.).
» socio-medical (registration of recipes, drug delivery, medical care, etc.)
» psycho-pedagogical (educational, communication, etc.)
» socio-economic (allowances, pensions, financial aid, etc.)
» socio-legal (registration documents, consultation and, etc.)
» socio-cultural

Prospects for the development of social services - related to the balance of demand and supply of social services by expanding the its list and improving the quality and territorial availability of services through the use of new technologies, and attracting non-governmental organizations and the use of both free and paid forms of social services.

Potential opportunities for improvement the situation are related to the implementation of a complex socio-economic regional policy, as well as to the implementation of projects, including international. Projects may focus on solving problems in the field of demography, education, health, recreation and development of the social infrastructure elements, as well as the development of small and medium-sized businesses in the service sector and the processing of natural resources.

1.2 ECONOMY OF THE REPUBLIC OF KARELIA: STRUCTURE AND TRENDS

There are several key documents in the Republic of Karelia, which implementation determines the priorities of the economic policy nowadays and in the future: the Strategy for Socio-Economic Development of the Republic of Karelia for the period up to 2020, the Concept of socio-economic development of the Republic of Karelia up to 2017, the Socio-Economic development of the Republic of Karelia for the period up to 2015.

The most priority areas in the economic development of the Republic of Karelia are issues relating to the specific development of the region and the economy mono profile cities, investment, development of transport and border infrastructure, the prospects for industrial cluster and distribution of productive forces in the region, the development of small and medium-sized businesses.

Additional opportunities to resolve these issues related to the federal program for the development of the Republic of Karelia in celebration of the 100th anniversary of the Republic of Karelia, which is currently being formed. The program includes projects in the areas of health, education, culture and sports, the development of industrial production, science, natural resources, environment and tourism in the Republic of Karelia.

The largest Russian companies are expected to participate in the program: “Rosatom”, “Gazprom”, Oil Company “Rosneft”, “Russian Railways”, “AFK Systema” group of companies “Renova”, “RUSAL”.

Agreements with these companies include the development and improvement of material and technical base of the social sphere in the Republic of Karelia, support of innovation, implementation of investment projects on the territory of the Republic of Karelia.

The Government, science and business community of Republic of Karelia are working on finding new points of economic growth, decreasing of migration outflows, providing development of human capital and creating conditions for the development of competitive sectors of the economy associated with the development and deeper processing of resources based on innovative technologies.

Creating the conditions for sustainable economic growth in the Republic of Karelia is provided through the provision of government support to the enterprises with key economic activities, promoting the further modernization of existing and creation of new industries based on innovative resource-saving and high-performance technologies for improving the quality and competitiveness, productivity and cost reduction.

At the same time, it is still not possible to solve the problem of decreasing the productivity of key economic activities of the Republic of Karelia (Figure 1.2.1).

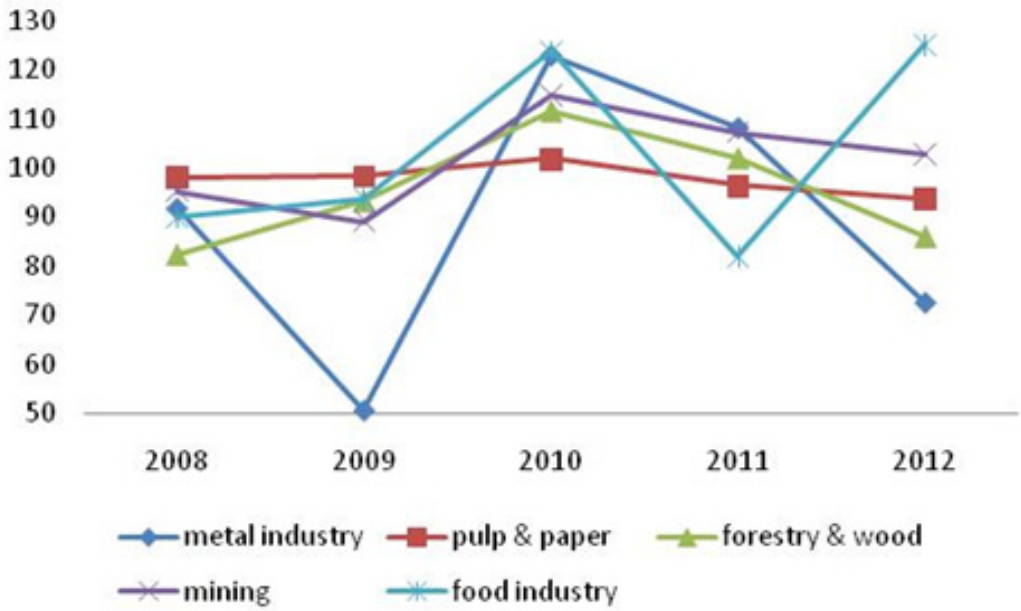


Figure 1.2.1. *Dynamic of production indexes of key economic activities in The Republic of Karelia, %. (Statistical Yearbook 2013)*

Based on the analysis of the production index for the 2008-2012 it is necessary to highlight certain types of economic activity with: positive dynamics of the production index, the production slowdown, the unstable dynamics of production, reducing production.

Positive dynamics of the production index: food production, chemical production, manufacture of other non-metallic mineral products, preproduction of electronic and optical equipment.

The production slowdown: mining, logging, fishing.

The unstable dynamics of production: textile and sewing manufacture, leather production and leather products, wood processing and manufacturing of wood products.

Reducing production: processing industries, pulp and paper, rubber and plastic products, manufacture of basic metals and metal products, machinery and equipment, transport vehicles and equipment, production and distribution of electricity, gas and water.

The most important economic activities in the Republic of Karelia during 2008-2012 are characterized by a steady decline in production or slowing its growth. Obviously, this is due both the influence of external factors (the situation on the world market) and domestic (the Russian legislation particularities, such us differentiated tax rates for different groups of taxpayers), as well as internal problems Karelian enterprises (high tariffs for electricity and railway transportation, the low speed of production modernization, conflict between owners and authorities, and others.)

The basis of the economy of the Republic of Karelia are forest industry enterprises, the mining sector, mechanical engineering, electric power and food industries.

There are about 40 innovative companies, IT-park of Petrozavodsk State University, Innovation Center "Ukko", Karelian technology transfer center at Karelian Research Centre of RAS in the Republic of Karelia (see attachment 1).

The border location of the Republic of Karelia orients its economy on the development of export supplies. The export structure is dominated by unprocessed and treated lumber, newsprint paper, kraft paper, pulp, raw aluminum, iron ore pellets. The combined share of these species of production in the exports structure is about 90%. The major participants of foreign trade activities are of " Karelsky Okatysh ", "Kondopogozhsky Pulp and Paper Mill", "Segezhsky Pulp and Paper Mill", "SUAL" branch "NAZ-SUAL," which accounts for over 70% of export products.

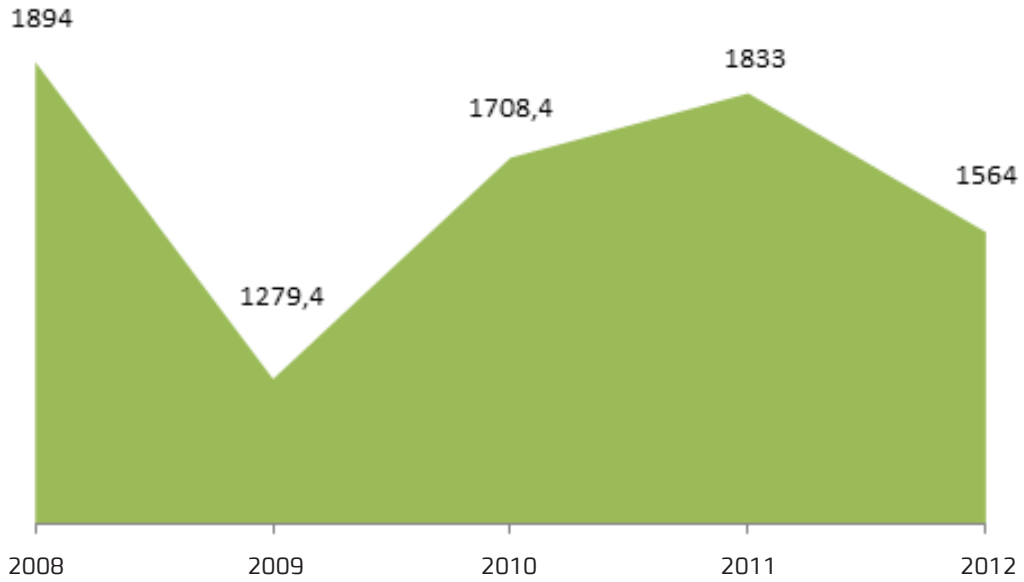


Figure 1.2.2. *Foreign trade turnover of the Republic of Karelia, mln USD. (Statistical Yearbook 2013)*

Foreign trade turnover is presented in fig. 1.2.2. In 2012 it amounted 1,564 million of USA Dollars. Major trading partners of the Republic of Karelia in 2008-2012. were Finland, the Netherlands, Turkey, China.

Forest Industry Complex

Forest industry complex of the Republic of Karelia is a leader in the regional economy. It includes enterprises for Forestry and wood processing, manufacturing of wood products, cellulose, wood pulp and paper products.

Forest industry enterprises are situated in all municipalities of the Republic of Karelia. They produce about 11% of domestic regional product, 22% and 12% of tax payments to re-regional and local budgets, provide employment for 5,8% of the total employed in the economy and give more than half of all exports. About 70% of the Forest industry complex products are exported.

In addition to a substantial contribution to the economy of the Republic of Karelia forest industry has great social significance. Forest companies are major employers in the most of the mono profile cities with a population of 103,5 thousands people (15% of all inhabitants of the Republic of Karelia).

The Republic of Karelia processed about 70% of harvested wood. But there is an acute problem of stability of supply of raw materials for the wood-processing industries. For ex-

ample, the annual consumption of coniferous pulpwood at Karelian pulp and paper mills is 3.6 million m3, but the Karelian forest companies on the basis of available resources, can provide only 45% of the needed raw materials (Forest does not happen much 2011). The deficit of wood raw material is covered by supplies from other regions, mainly the subjects of the North-West Federal District.

Coniferous wood have strong demand in the Republic of Karelia. Local loggers do not have any problems with its sales, unlike deciduous wood species (birch, aspen). The main reason is that there is practically no production capacity for processing deciduous wood in the Republic of Karelia.

Due to the limited forest resources extensive development of Karelian Forest industry complex is impossible. Therefore modernization of existing wood processing enterprises and integrate manufacturing process softwood timber is to come (Kozyreva 2007). The largest wood-processing enterprises in Karelia are pulp and paper mills in Kondopoga and Segezha ("Kondopoga" and "Segezhsky Pulp and Paper Mill"). Modernization of these enterprises requires substantial costs both in the main and support production.

Until recently, in the most favorable situation was "Segezhsky Pulp and Paper Mill". The mill is included in one of the largest forest holdings in Russia "Inveslesprom", which carried out large-scale investments in the development of mill (hardware upgrades, maintenance of the enterprise's own resource base).

"Inveslesprom" launched the largest investment project in the Karelian Forest industry complex - reconstruction project of Segezhsky Pulp and Paper Mill "Belij Medved' / Polar Bear". Investment is more than $ 1 billion. As a result of the project the enterprise will process deciduous wood and produce bleached pulp, which in the future will produce a white sack kraft paper and paperboard. According to preliminary calculations, " Belij Medved' / Polar bear" will allow to increase productivity in ten times and will significantly reduce the burden on the environment (emissions of sulfur dioxide into the atmosphere will be reduced by 95%, water consumption will be reduced by 50%). Plans for the project stopped because of the credit institution change.

Investments in enterprises engaged in processing of wood and of products of wood, significantly less than in the pulp and paper industry (Prokopiev 2011). As a result, in Karelia few modern wood processing enterprises producing products with high added value. On the other hand, the untapped potential of woodworking industry is a source of growth of efficiency in Karelian Forest industry complex.

As a positive phenomenon in the Karelian Forest industry complex can be the appearance of bioenergy projects and projects aimed at import substitution. Equipment for the production of biofuels from wood began to appear in the Republic of Karelia since mid 2000s: fuel granules (pellets) and fuel briquettes. Thanks to the steady demand for biofuels in the Nordic countries, its production in Karelia is extending. Development of this area in the Republic of Karelia will partially solve the problem with processing of deciduous wood. An example of a project aimed at import substitution is a building in Petrozavodsk in Russia first plant for the production of OSB plates at "DOK Kalevala".

Limiting factor of the forest industry development is the slow development of related industries. This primarily concerns the construction: up to 90% of the lumber used in the construction. Therefore, activities to support the development and promotion of low-rise construction will increase the domestic demand for wood products. It will lead to an increase in investment and finally to successful transition the wood-processing enterprises on the new qualitative stage of development.

In addition to the listed companies of the Karelian Forest industry complex it is necessary to list other companies: “Zapkarelles” (Suojärvi District), “Setles” (Pitkarantsky District), “Kostomuksha Construction Company», «Swedwood Karelia” and “Fintec (Kostamuksha), «Solomenskiy timber mill” (Petrozavodsk).

Mining Complex

Mining industry traditionally is essential for the economy of the Republic of Karelia, along with the forest industry. The share of tax revenues to the national budget of the mining industries for the period 2008-2012 was about 20%. More than 90 companies operate in mining industry and have social role in the development of the Republic of Karelia. The mining industry provides employment for 8,000 people in many districts of the republic.
The main products of the mining complex are iron ore pellets, feldspar raw material, schungite gravel, crushed stone, block stone.

As of May 01, 2014 408 subsoil licenses operated in the Republic of Karelia: 294 - common minerals, 30 - unextended (iron and chrome ore, gold, copper, nickel, schungite rock), 84 - groundwater.

The main mining enterprises is of “Karelsky Okatysh” The company produces iron ore on Kostamuksha and Korpangsky deposits. After processing the ore obtained iron ore pellets, the used in the metallurgical industry. The company is a leader in Russia for this type of product.

Other enterprises focused on the mining of stone construction materials (crushed stone, decorative stone). Most enterprises are concentrated in the southern part of the Republic of Karelia and in Louhi, Kem, White Sea areas and Kostomuksha.

The main problems in the development of the mining complex are the high tariffs for transport and electricity, poor transport infrastructure, staff shortages, imperfection of legislation, lack of geological exploration, low innovation activity of enterprises.

Significant obstacle for the development of the mining industry are the environmental standards and the protests of the local population, as well as competition of mining, forestry and tourism for the right to development in the same areas (Shchiptsov 2012).

Prospects for the development of the mining complex can be implemented in two ways. The first involves the development of stone construction materials production (gravel,

sand mixtures, decorative block of stone and gravel). The second is associated with the diversification of the production: the development of chrome ore deposits, nickel (Aganozersky area), gold, mining of minerals (garnet, quartz, shungit, kyanite). The second way is connected with the use of biogenic raw materials (peat) to produce peat pellets (pellets) for the supply of remote settlements and infrastructure (Ryazancev, Prokopiev, and Tuominen 2014).

Machine-building Industry

One of the priorities of industrial development of the Republic of Karelia is machine-building industry. During the Soviet period the Republic of Karelia had successful enterprises for the production of forestry equipment, paper making equipment, microelectronics, water transport and industrial machines. Unfortunately, most of these industries has declined significantly, got new profile or ceased to exist.

The structure and volume of machine-building industry output in the Republic of Karelia in 2005-2010 is shown in Fig. 1.2.3.

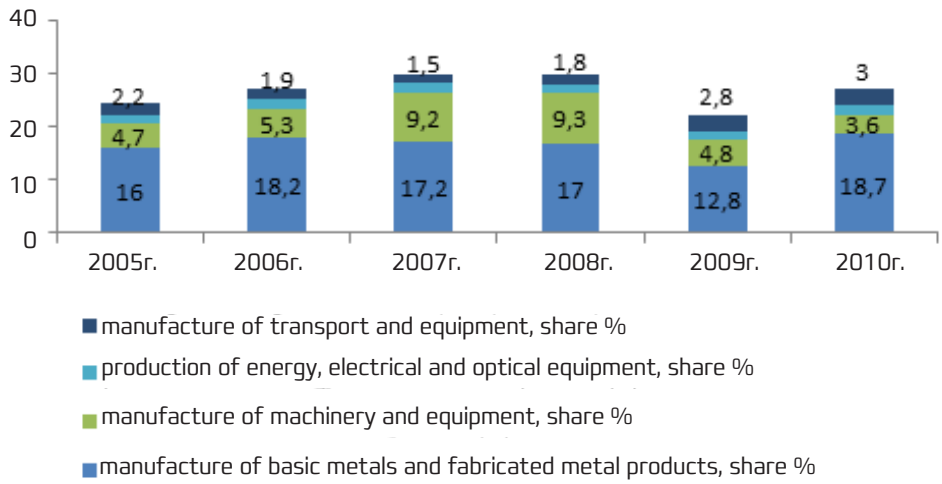


Figure 1.2.3. *Structure of engineering products in the Republic of Karelia,% (The Republic of Karelia in Figures 2011).*

Prospects for the development of machine-building industry in the Republic of Karelia related to the reconstruction, modernization of production, development of new products, expanding markets, more efficient use of production capacity, the formation of engineering cluster for forest machinery (Nemkovich and Kurilo 2013).

The main challenges for the successful development of the machine-building industry is highly competitive with foreign analogues, the staff shortage.

“Petrozavodskmash” is one of the largest companies in the industry. In accordance with integration with the State Corporation “Rosatom” the enterprise plans to increase the production of equipment for the nuclear industry, including the manufacture for storage and transportation of nuclear waste. In addition, current work will be continued to produce equipment for the pulp and paper, oil industries.

These measures allowed «Petrozavodskmash” provide by the end of 2013 the increase in shipment of the product at the level of 108.8% compared to 2012, the profitable activities and growth of tax revenue in the budget of the Republic of Karelia.

Development of forest machinery production is expected on “Onego Tractor Plant”. At the moment enterprise is working on import substitution through the organization of production of new types of modern logging equipment, including on the basis of a new model of “Onezhets 300.” Differentiation of production involves production of forest fire equipment, equipment base models with crane-drilling, welding, etc.

Since 2010, “Onego Tractor Plant” together with the plant “Silvatec” (Denmark) (part of the Concern “Tractor plants”) produce harvesters and forwarders 8x8. Design work provided by “Silvatec” will be the basis for the design documentation of harvester and forwarder with wheel formula 6x6, which in 2014 will be produced on the “Onego Tractor Plant”. New products will be more accessible for loggers in lower price segment.

In the framework of the concentration of production at the facilities of “Onego Tractor Plant”; some models of equipment previously released on the “Krasnoyarsk forest machine building factory” were relocated from Krasnoyarsk to Petrozavodsk: harvester and forwarder 6x6, 8x8 and skidder 4x4.

So, on the basis of “Onego Tractor Plant” will focus the production of all types of forest machines produced by the Company in Petrozavodsk, which creates prerequisites for the formation of a timber industry cluster in the Republic of Karelia.

There is a possibility for production of ekranoplanes on the basis of enterprise “ ORION” in Karelia. The first samples ekranoplanes are on trial. However, the start of production associated with investments from the federal budget.

Prospects for the development of “Onega shipyard” related to the formation of the list of promising new products and looking for investors.

Manufacture of electrical components developed by “AEK” subsidiary company of the Finnish concern PKC Group, located in Kostomuksha (Report of the Ministry of Economic Development 2014).

Metal industry

Development of metallurgy in the Republic of Karelia nowadays is associated with the prospects of the leading steel companies: “NAZ-SUAL” and ZAO “Vyartsilya Metal Products Plant”.

“NAZ-SUAL” is located in Segezhskiy district. In 2012, there was completed work on increasing production volumes with higher value added (aluminum-silicon and aluminum-magnesium alloys in small bars). At the same time, the decline of stock prices for aluminum, high the level of production costs due to higher electricity prices have a negative impact on the development of the enterprise. Possible product diversification suggests the production of aluminum foil and radiators for heating (RUSAL and ELSO Group 2014).

“Vyartsilya Metal Products Plant” belongs to the group of companies “Mechel”. The company has been producing low-carbon, elektrodiodnoy and structural wire, galvanized nails, steel net with a polymeric covering, and is the only Russian producer of hot-dip galvanized nails.

The transition to new technology to reduce the environmentally harmful effects and increase production is implemented in 2012-2015.

In June 2013 negative changes occurred on the market for the enterprise which create the conditions for a significant reduction in production volumes. Starting from the second half of 2013 the production activities of the enterprise becomes unprofitable. The company is actively working to expand the market for their products.

In 2014, there were serious problems at the owner of the company “Mechel”, which has strengthened the threat to the further development of the enterprise in Vyartsilya.

Agricultural complex

The share of production of agriculture in total gross regional product in 2012 was 8,9%, including agricultural production – 3,6%, fishing and fish farming – 1,1%, food products – 4,2%. Agricultural production to meet the needs of the population of the Republic of Karelia for milk by 44%, meat by 18%, vegetables - 42%, potatoes - 85%. In the structure of agricultural complex are allocated 19 companies, more than 1 000 (peasant) farms, entrepreneurs and about 70,000 individual sub-competitive farms (Republic of Karelia for investors 2014).

The important feature of the agricultural complex of the Republic of Karelia is the production of trout. 70% of Russia’s cage trout are grown in the Republic of Karelia. Cage trout farming on an industrial basis is a promising direction in the development of the fishing industry. Republic of Karelia has unique natural conditions to develop commercial fish farming among other regions of North-West of Russia.

Key companies from the fishing industry: «Kalaya maryapoyat", "Kala Ranta", "Ladoga Trout", "Trout farming Segozerskoye", "Rock-for", "Meliorator."

Tourism

The Republic of Karelia has recreational resources and a rich cultural and historical heritage, which causes a sustained interest among potential visitors from Russia and abroad. The development of tourism is one of the most promising areas of economic development of the Republic of Karelia.

The Republic of Karelia is two nature reserves (Kivatch, Kostomukshskiy) and three national parks: Paanajarvi, Vodlozersky and Kalevala. The main types of tourism in the Republic of Karelia are: cultural, educational, natural, environmental, sports, water, rural. The growing dynamics of key indicators for the 2009-2013 (fig.1.2.4) say about the development of tourism in the Republic of Karelia.

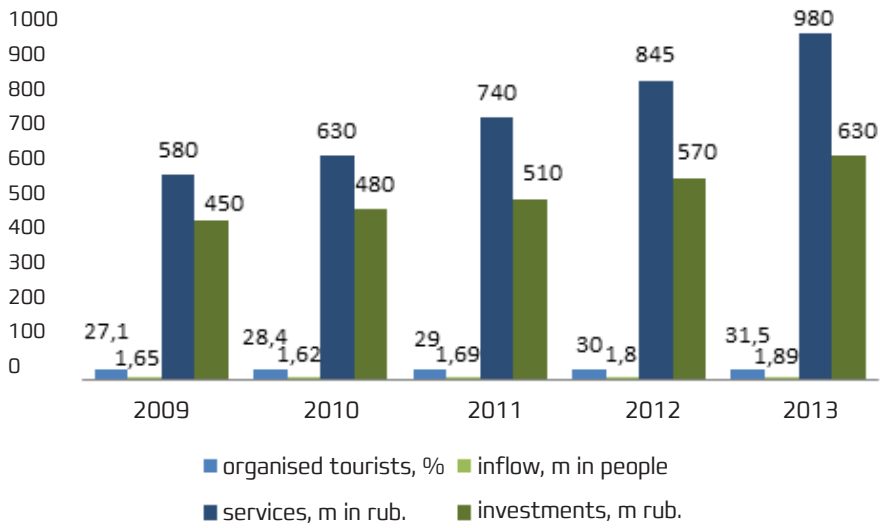


Figure 1.2.4. *Fig. 1.2.4 The main indicators of the development of tourism in the Republic of Karelia in 2009-2013.*

Prospects for tourism are associated with development of infrastructure (construction and repair accommodation facilities, transport accessibility of objects, increasing of objects, etc).

A significant part of the problem, mostly in shipbuilding, mechanical engineering and metallurgy is systemic. The businesses and their owners need to properly assess the challenges they strategic challenges to solve these problems:

» The achievement of new markets and finding market niches for current products, and through the development of new products and technologies;

» Renewal of fixed assets of industrial enterprises, as well as the inclusion of the results of scientific and technical institutions;

» Search and implementation an effective system of management practices for long-term and strategic perspective (Report of the Ministry of Economic Development 2014).

List of the main companies in some sectors of Karelia's Economy is presented in Attachment 2.

Prospects for International Cooperation of the Republic of Karelia in the economic sphere are associated with the creation of new competitive products, attracting investments, the access to foreign markets, the organization of joint production in the territory of the Republic of Karelia, the transfer of technology and equipment.

2 International economic cooperation of the Republic of Karelia

2.1 CROSS-BORDER INVESTMENTS

International economic cooperation is a multi-faceted phenomenon acquiring various types and forms. The most significant forms of international economic cooperation are international trade and trans-border investment. The purpose of this section was to study cross-border investments from Finland to the Republic of Karelia. The following issues were addressed within the framework of this work. Comparative analysis of Russian regions is done in order to identify the position of the Republic of Karelia in the overall investment cooperation between Finland and Russia. The subject of the analysis were the volume and diversification of investments. Furthermore, the dynamics and structure of investments from Finland to the Republic of Karelia is examined. Based on the analysis results we have identified patterns, challenges and opportunities for cross-border economic cooperation.

Finland shares common border with three Russian regions - Murmansk Oblast, the Republic of Karelia and Leningrad Oblast. The Republic of Karelia shares the longest part of border with Finland. However, the largest volume of passengers and goods to and from Finland accounts for Leningrad Oblast and its geographic center city of St. Petersburg. Whether investment flows are distributed same unevenly? Whether the Republic of Karelia is one of the priority targets for investments from Finland or its position in investment cooperation with Finland does not significantly differ from those of peripheral regions of Russia? To answer these questions we have examined the spatial distribution of investments from Finland over Russia regions.

The primary data source for this research is Federal Service of State Statistics that provides statistical data for the "Investments received from foreign investors" indicator (Edinaya... 2014). Timeframe of the study is limited by the period from 2006 to 2013, inclusive, which is determined by the availability of statistical data.

First, we have summed up investment volumes from Finland for 8 years for each region of Russia, the results of calculations are presented in table 2.1.1 and on the map (Fig. 2.1.1). The Republic of Karelia is in the 9th place among all Russian regions in terms of inward investment flows from Finland. This rank is much higher as compared to the rank of the Republic of Karelia in terms of gross regional product (62nd place) and population (63rd place). The reason for the relatively large volume of investment flow to the Republic of Karelia from Finland (if compared with other similar regions) is its cross-border position. Thus, the spatial location on the border with Finland is a factor contributing to trans-border investment to the Republic of Karelia. However, the other Russian region sharing a common border with Finland – Murmansk Oblast – receives minor volumes of investment from Finland. At the same time, Leningrad Oblast (with its center in St. Petersburg) sharing the shortest part of the border with Finland is a leading recipient. This phenomenon can be explained by the fact that Murmansk Oblast shares border with less developed Northeastern areas on the Finnish side with lower density of economic activities, while Leningrad Oblast is the closest to the most prosperous and densely populated Southern Finnish regions. The Republic of Karelia which is geographically located between Murmansk and Leningrad Oblasts occupies a corresponding intermediate position in terms of investment flows received from Finland.

Table 2.1.1. *Russian regions received in total 100+ mio USD of investments from Finland within 2006-2013. Source: data from Federal Statistics (Edinaya... 2014) compiled by author.*

	Region	**Accumulated investment flow, 2006-2013, thsd. USD**
1	City of St. Petersburg	2 185 671
2	Leningrad Oblast	1 358 494
3	Moscow Oblast	1 006 968
4	City of Moscow	997 377
5	Kaluga Oblast	515 271
6	Novgorod Oblast	431 926
7	Republic of Komi	355 745
8	Tver Oblast	293 408
9	Republic of Karelia	257 175
10	Arkhangelsk Oblast	111 750
11	Irkutsk Oblast	105 132

Analysis of investment flows from Finland to Russia allows to identify key spatial and sectoral attractors for investment. Two spatial attractor are identified, they are, first, cross-border regions (Republic of Karelia, Leningrad Oblast) and, second, the largest metropolises of Moscow and St. Petersburg with adjacent areas (Moscow Oblast, Leningrad Oblast, Kaluga Oblast, Novgorod Oblast, Tver Oblast). Note that Leningrad Oblast and St. Petersburg benefit from both factors that has an effect in highest volume of investments from Finland there.

The main sector attracting highest volumes of investment from Finland to Russia is pulp and paper industry (Edinaya..., 2014). This factor explains a significant volume of investment accumulated in Arkhangelsk Oblast, Irkutsk Oblast and Republic of Komi who are not sharing a common border with Finland and are not adjacent to large metropolises. In the Republic of Karelia, pulp and paper industry sector does not receive investments from Finland that may be caused by a limited set of objects for potential investment as this production in the Republic of Karelia is concentrated in only a few but large enterprises. Nevertheless, given that pulp and paper companies in the Republic of Karelia are currently experiencing a need to modernize production facilities, Finnish investors may soon open opportunities for cooperation in this field.

Figure 2.1.1. *Spatial distribution of investments from Finland (the total volume for 2006-2013). Intense color means higher volume. Source: data from Federal Statistics (Edinaya... 2014) compiled by author.*

Money volume is not the only characteristic of investment cooperation as a phenomenon. Another important parameter of investment flow in any region is its diversification. Within the current study, we define diversification as the number of sectors in the region that actually receive investments. The set of sectors is taken as it is adopted by the Federal Service of State Statistics of the Russian Federation. This set is well detailed and contains 2000+ items. The results of calculations of diversification are presented in table 2.1.2.

The results of the analysis demonstrate that the Republic of Karelia is a region featured by relatively high degree of diversification of investments coming from Finland. The Republic is the second best in terms of diversification right after Moscow and St. Petersburg metropolitan areas. Assuming that investment flows as well as development of economy in general are the more sustainable the more they are diversified we may conclude that the flow of investments in the Republic of Karelia from Finland is relatively sustainable. Emphasizing sustainability in relation to most other regions of Russia we should note, however, significant fluctuations in diversification during the period under analysis: from maximum values in 2007-2008 (13 recipient sectors) to minimum values in 2010 and 2013 (4 recipient sectors). Based on the diversification values, investments from Finland to St. Petersburg and Moscow Metropolitan areas are more sustainable than to the Republic of Karelia.

Table 2.1.2. *The number of sectors received of investment from Finland. Source: data from Federal Statistics (Edinaya... 2014) compiled by author.*

	Region	2006	2007	2008	2009	2010	2011	2012	2013	Avg.
1	City of Moscow	18	29	28	27	23	21	27	25	24,8
2	City of St. Petersburg	27	18	28	27	20	21	23	21	23,1
3	Leningrad Oblast	11	13	10	10	12	14	13	8	11,4
4	Moscow Oblast	7	12	9	14	10	7	13	10	10,3
5	Republic of Karelia	11	13	13	9	4	7	9	4	8,8
6	Kaluga Oblast	2	4	7	8	9	8	7	8	6,6
7	Novgorod Oblast	2	4	3	3	3	2	1	3	2,6
	other regions									< 2

We have characterized the position of the Republic of Karelia in investment cooperation with Finland in comparison with other Russian regions. Let us consider inner dynamics and structure of investments from Finland to the Republic of Karelia. To do this study, we have generalized data from the Federal Statistics (Edinaya..., 2014) on investments from Finland to the Republic of Karelia given in breakdown by 'tiny' sectors and grouped data into 'big' sectors in accordance with standard three-sector division (Natural Resources, Manufacturing, and Services). Additionally, we have isolated industry on production of non-profiled wood boards, that has been done for two reasons: first, this industry is the major recipient of investment from Finland in the Republic of Karelia, and, secondly, there are different approaches as to which sector it belongs to – whether Natural Resources sec-

tor or Manufacturing sector. In our opinion, given that the matter of production cycle of non-profiled boards is only the primary processing of wood logs, the industry is closer to the Natural Resources sector rather than Manufacturing sector. The results of the calculations are presented in figure 2.1.2.

The largest share of investments coming from Finland to the Republic of Karelia are targeted on sectors in the field of natural resources and primary processing of raw materials (production of non-profiled wood boards). Industries from the Natural Resources sector that received investments from Finland within 2006-2013 are logging (forestry), fish breeding, and quarrying, and the share of the logging industry in the total volume of investments in the Natural Resources sector is overwhelming 96%.

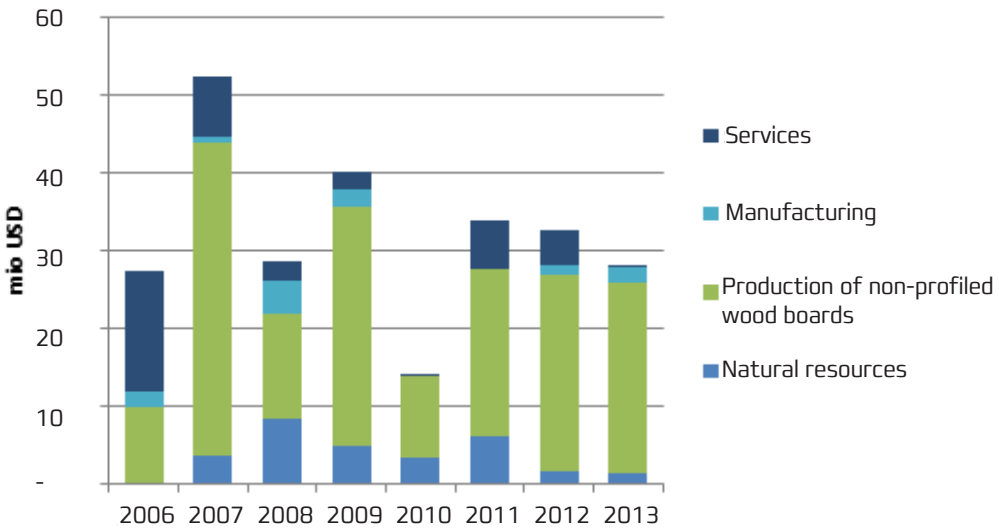


Figure 2.1.2. *Investments from Finland to the Republic of Karelia by sectors. Source: data from Federal Statistics (Edinaya... 2014) compiled by author.*

Manufacturing and Services sectors in the Republic of Karelia are minor recipients of investments from Finland. Their total share in the investments exceeded 50% only in 2006 and in subsequent years had the tendency to decline dropping to 7.3% in 2013.

Thus, the major driver for investment flows from Finland to the Republic of Karelia are natural advantages of the territory, mainly forest resources. Share of investments that are targeted on logging and primary processing of wood is well above 90% at the present time. Investments in sectors not directly related to natural resources are small in volume and tend to decrease.

Time series of the total investments from Finland to the Republic of Karelia shows no distinct trend as it varies considerably throughout the studied period (Fig. 2.1.2). Only within

the last three years (2011-2013) total investments volume do not vary significantly, however, tends to decrease. Note that in 2011-2013 the decrease is due to the decrease of investments in the Manufacturing and Services sectors, while investment in forestry is quite stable.

Thus, investments from Finland to the Republic of Karelia focus on Natural Resources is strengthening, while Manufacturing and Services sectors have almost lost attention from Finnish investors.

2.2. BACKGROUNDS FOR CROSS-BORDER CLUSTERS

Wood industry cluster

The definition of the term "cluster" in the scientific literature varies depending on the sector setting the context of a study. Within the manufacturing sector, a cluster is defined as a network of independent production and/or service firms (including their suppliers), developers of technologies and know-how (universities, research institutes, engineering companies), organizations arranging market transactions (brokers, consultants) and customers all interacting within the same value chain (Filippov 2003).

The core of the wood industry cluster in the Republic of Karelia can be constituted by major wood processing plants and pulp and paper mills that produce wood products with high value added. These are primarily two pulp and paper mills in Kondopoga and Segezha. Production companies in other locations in the Republic of Karelia are also setting the background for wood industry cluster.

Large wood industry center is being formed in Kostomuksha where LLC Kostomuksha Construction Company (Kostomukshskaya Stroitelnaya Kompanija) is implementing its plans for complex wood processing production. However, chief wood processing company in Kostomuksha – Swedwood-Karelia (a subsidiary of IKEA) – has recently ceased operations there and moved the production of solid wood components to Swedwood-Tikhvin, Leningrad Oblast (IKEA Industry 2014).

Large-scale production of engineered wood has been launched in Petrozavodsk in June 2013 as DOK Kalevala started its operations for the production of oriented strand boards (OSB). The designed capacity of the plant is currently 300 thousand cubic meters of finished products per year. The technological concept of the plant allows further building and launching the second production line without stopping the production operations that would increase the total capacity up to 500 thousand cubic meters per year (Press service DOK Kalevala 2014). Successful implementation of this project would let DOK Kalevala become one of the key actors in the field of wood construction materials.

In the mid-term, a large wood industry center is planned to be established in Pudozh district. According to preliminary plans private intend to build up a high-tech complex for timber harvesting and wood processing with annual consumption of 1.7 million cubic meters of raw wood (Prokopiev 2012).

Region's training system appears to be an important component of the wood industry cluster as availability of skilled labour along with the availability of forest resources is one of the main pre-conditions for attracting investments in the sector. Educational institutions in the Republic of Karelia that provide training in this field are Petrozavodsk State University, Petrozavodsk College of Forestry and Shuisko-Vidanskaja Forest Technical School. Training programs provided by these institutions cover all spheres of knowledge currently required by wood industry in the Republic of Karelia - from forestry to pulp and paper production. Petrozavodsk State University is the only educational institution in the Republic that provides higher education as well as post-graduate study programs and post-doc research.

R&D sector is acquiring an increasing importance for every sector of economy. Forest cluster is not an exception. Institutions in the Republic of Karelia with specialization on R&D in the sphere of wood industry are Karelian Research Institute of Forestry Complex at Petrozavodsk State University (KarNIILPK) and Forest Research Institute of the Karelian Research Center of the Russian Academy of Sciences (IL KarRC RAS). Research activities at IL KarRC RAS are primarily in the fields of forest science and forestry. Research activities at KarNIILPK cover almost all other areas related to wood industry.

Cross-border location of the Republic of Karelia and high demand from the Finnish side for the Russian timber wood have had an effect in the dissemination of "Scandinavian" logging technology in the region (Druzhinin and Kukhareva 2012). It is based on the use of high-performance machines - harvesters and forwarders. More than 90% of wood logs produced in the Republic of Karelia are harvested using "Scandinavian" technology (Prokopiev 2012). Widespread implementation of this technology caused the growth of labor productivity in wood logging industry (Fig. 2.2.1).

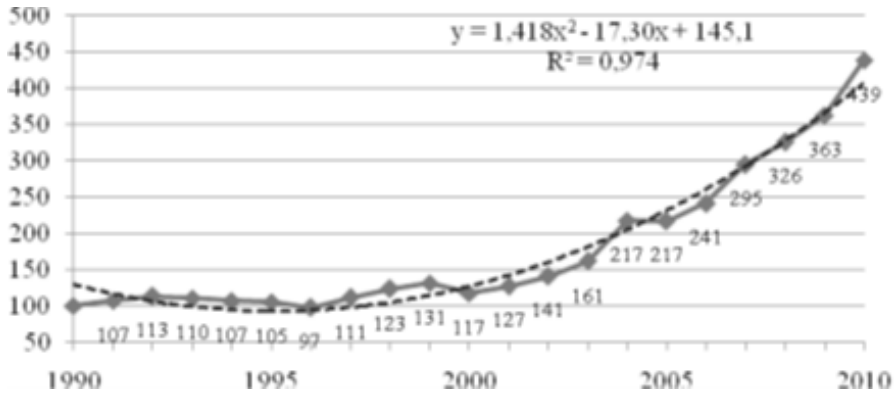


Figure 2.2.1. *Labor productivity rate in logging industry in the Republic of Karelia as % to 1990 (Prokopiev 2012)*

Harvesters and forwarders operated in Russia are mainly imported from abroad. Some efforts are done to launch production of these machines in the Republic of Karelia. In 2009, Onezhsky Tractor Plant has started assembly of harvesters developed by Silvatec (Onezhsky... 2014). Silvatec Skovmaskiner A/S and Onezhsky Tractor Plant are fully owned by the Russian Concern Tractor Plants (Silvatec 2014).

Trainees wishing to gain and improve skills of operating harvesters may use simulators made by Ponsse available in the IT-Park of Petrozavodsk State University.

Thus, the presence of elements of the wood industry cluster described above sets the preconditions for its creation in the Republic of Karelia.

Some obstacles is hindering this process. First of all, there is no officially adopted strategy vision for wood industry development. Secondly, underdeveloped road network limits the availability of forest resources and complicates measures for their protection. This issue concerns not only the construction of new forest roads operating year-round, but also the reconstruction of existing roads and bridges to ensure the passage of heavy vehicles. Thirdly, the weak development of related industries (e.g. wooden construction and furniture manufacturing) causes limited demand for wood products (Prokopiev 2012).

Rural tourism cluster

Tourism as a service sector generates relatively high value added and invokes a multiplicative effect within product chains. Rural tourism serves as a source of income for rural settlements and thus contributes to the sustainability of rural areas. The role of rural tourism sector is even more important for the areas with limited opportunities for agricultural production as well as for those where traditional rural industries has declined or become considerably less labour intensive. Republic of Karelia is a Russian northern peripheral region experiencing loss of population in rural areas due to noncompetitive agricultural sector and shift in forest harvesting technologies. The distinctive feature of the Republic of Karelia is its strong tourist image. Therefore there is a need and opportunities for developing rural tourism in the Republic of Karelia. Republic of Karelia's neighboring country – Finland – is known for its rich opportunities for rural vacationing. Rural tourism sector in Finland is well-established and internationally recognized. The aim of this particular study is to explore feasibility of cross-border rural tourism cluster that would cover cross-border areas in both countries.

The study was pursued in several lines. The first task included study of rural tourism sector in the Republic of Karelia, Russia. The issues concerned were typical characteristics of rural tourist accommodation and the spatial allocation of accommodation facilities. The research method employed for this task was gathering, systematization and analysis of information on marketed rural tourist accommodation facilities. Accommodation units were grouped by municipal districts and group totals were plotted on the map. The information was obtained mainly from the internet, the sources were home websites for individual cottages and hotels, and aggregator websites specializing on rural tourist accommodation

(Tourist Information Center of the Republic of Karelia 2013; All Karelia 2013; Guest houses and cottages in Karelia 2013). The data were also obtained within authors' field studies within related projects.

The second task was to highlight general features of rural tourism sector in Finland. Research papers by Finnish authors and statistical data were reviewed in order to fulfill this task. The issues concerned were typical characteristics of rural tourist accommodation, tourists' motivation and degree of internationalization of the rural tourism sector.

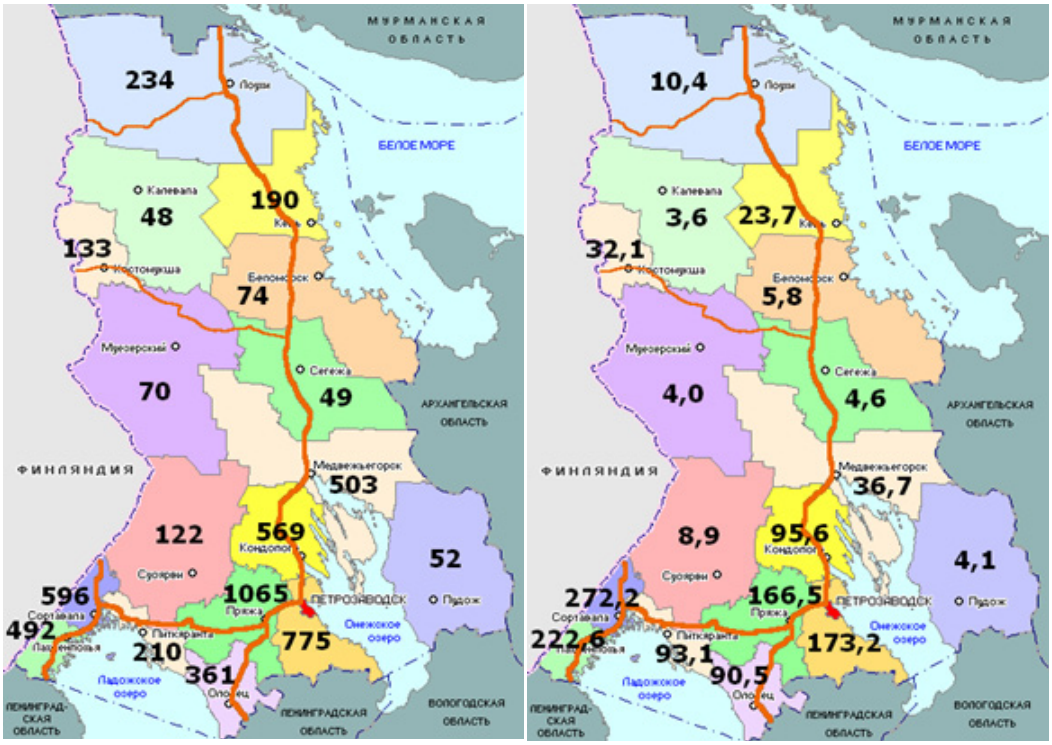
The third task was to summarize study outcomes to identify the general context and preconditions favorable to the development of cooperation at the operational level between Finland and the Republic of Karelia in the sphere of rural tourism.

Based on the results of the study authors try to estimate the feasibility of promoting cross-border rural tourism cluster that would cover cross-border areas in Finland and the Republic of Karelia.

Rural tourism sector in the Republic of Karelia, Russia is undergoing a stage of early development. As of 2014, no distinct model is adopted as a general pattern for promotion of rural tourism sector. Some elements for the model are borrowed from the Finnish rural tourism sector and others from the Russian hospitality industry in general.

Republic of Karelia is famous as country of lakes – there are more than 60'000 lakes in the region. The territory of the Republic of Karelia is covered with forests by 55% (Tourist... 2013). According to the acting legislation all rivers and lakes are protected with 'water protection zones' (50-500 meters wide) within which any agricultural and forest harvesting activities are forbidden. Rural tourist accommodation facilities in the Republic of Karelia are typically located in the immediate or close proximity to a lake and are surrounded with forest.

Various types of accommodation are available for rural tourists: a separate cottage (often built purposefully for hospitality business), a house shared with hosting family, a cottage within a small tourist village, and room in a hotel. Separate cottages are mostly owned by individuals, tourist villages and hotels are operated by companies. Accommodation facilities are often located on the territory of the rural settlement or close to it, that is caused by the lack of roads to remote areas outside main pathways. As a rule there is always an opportunity for purchasing local agricultural and forest food products. Every accommodation facility is equipped with sauna (All Karelia 2013).



Total capacity | Capacity per 1000 square km

Figure 2.2.2. *Capacity of rural accommodation facilities by districts in the Republic of Karelia (Shishkin and Petrova 2013).*

Total capacity of rural tourist accommodation in the Republic of Karelia accounts to 5.5 thousand beds (Shishkin and Petrova 2013). Accommodation facilities are allocated spatially unevenly (Figure 2.2.2). The highest concentration is revealed in the following areas:

(1) districts surrounding Petrozavodsk, capital city of the Republic of Karelia whose community accounts to about half of the total population of the region;
(2) districts having direct road connection to Finland; and
(3) districts close to St. Petersburg, the biggest city in the Northwestern Russia.

The specific feature of the geographical position of the Republic of Karelia is conjunction of peripherality and borderness (Kolesnikov 2012). The peripherality is determined firstly by the region's remote position to Moscow and other big cities in the central parts of Russia, and secondly low density of population in the region. The borderness of the Republic of Karelia is among the highest in Russia as it is directly attached to EU border and has relatively good transport connections with neighboring Finland.

Peripherality is generally viewed as a negative factor for a region's progress. To our opinion, influence of peripherality on rural tourism is rather peculiar – remoteness of the territory from large industrial centers and low density of population set specific conditions required

by a rural tourist: seclusion, untouched nature environment, calmness without city buzz and rush.

Rural tourism in Finland is being actively developed for more than 30 years. The pioneers were farmers who have been forced to explore means of income alternative to agriculture. Nowadays, there are about 10 thousand guest houses and 250 farms offering accommodation located, as a rule, in the immediate proximity to a lake shore or a river (fin-digest.ru 2013). Most of cottages are owned by individuals, not companies. Every cottage and farm is equipped with sauna. The comfort level of accommodation facilities varies from modest to luxury. About 80% of the marketed cottages qualify for at least three stars out of five according to classification developed by Lomarengas Oy company (Lomarengas 2013).

The main natural driver for rural tourism in Finland is nature environment in rural areas – lakes, rivers, and forests. As stated by Pesonen et al. (2011) "a typical Finnish rural holiday includes accommodation in a cottage, local food, sauna and some kind of nature activities, most often swimming, rowing and walking in the forest. Rural tourism establishments are often located in remote countryside, far away from neighbors." According to the research of motivations in rural tourism by Pesonen et al. (2011) tourists visiting rural destinations in Finland are motivated primarily with the opportunity to relax away from the ordinary and to have a sense of comfort. They also value the opportunity to be together as a family and to get refreshed.

Rural tourism in Finland is being internationalized. Foreign tourists account for 14 percent share of rural tourism customers (Komppula and Saraniemi 2007). Largest cottage rental company in Finland – Lomarengas Oy – has recently established marketing division for Russia and launched Russian interface for its web-site along with native Finnish and 'global' English ones (Lomarengas 2013); these facts contribute to the evidence of internationalization of Finnish rural tourism sector.

The general context for potential rural tourism cross-border cluster is set by shared border and cross-border cooperation in various spheres including tourism.

Borderness provides a pre-condition for cross-border cooperation in general and in the sphere of rural tourism in particular. Strategic priorities of the Republic of Karelia aimed at launch of new crossing points on the Russian-Finnish border and development of East-West transport corridors (Saveliev and Shishkin 2003) would contribute to the growth of inbound tourist flows to the region and particularly facilitate international rural tourism. Republic of Karelia participates in the cross-border cooperation with Finland at all levels of contacts – personal, business, and political. The intensity of cross-border exchange at personal level could be illustrated by the number of border crossings via points located in the Republic of Karelia: it raised from 1'408.5 thousand in 2009 to 2'062.0 thousand in 2012 (The Finnish Border Guard 2013) that is three times greater than population of the Republic of Karelia. Republic of Karelia is one of leading regions in Russia in terms of intensity of foreign trade with Finland and volume and diversity of investments from Finland (Druzhinin and Kukhareva 2012; Kolesnikov 2012) that is an evidence of well-established cross-border business cooperation. At the political level, Republic of Karelia is involved in coop-

eration with Finland regions within EU programmes and bilateral agreements. Regions of Kainuu, North Karelia and Northern Ostrobothnia in Finland and the Republic of Karelia in Russia has formed Euregio Karelia in 2000 (Euregio Karelia 2013). Practical projects are implemented within the Karelia ENPI CBC Programme (The European Neighbourhood and Partnership Instrument, cross-border cooperation), and Tourism cooperation is one of the themes of the programme (Karelia ENPI CBC 2013). Finland and Republic of Karelia are linked with tourist routes developed within joint projects: The Blue Road (Norway – Sweden – Finland – Republic of Karelia – Archangel), Mining Road (Outokumpu – Petrozavodsk), White Road (Kainuu, Oulu region – Republic of Karelia) and others (Karelia ENPI CBC 2013).

So, Finland and Republic of Karelia share similar conditions and factors for rural tourism development. They are:

- similar natural conditions – great number of small lakes, similar landscapes, forests, climate;
- similar spatial characteristics – low density of population, extensive scarcely inhabited areas disposing to secluded vacationing;
- shared history and cultural traditions;
- active cross-border cooperation in various spheres including tourism facilitating cross-border exchange with information and knowledge and encouraging mutual penetration of entrepreneurial initiatives.

The similarity of factor and conditions is favorable to establishing cross-border rural tourism cluster. The most prospective areas where the cluster could be localized are those that are adjacent to border crossing points since the border appears to be one of the major spatial attractors for guest houses (as per analysis for the Russian side). Thus, cross-border rural tourism cluster is undergoing formation de facto but it is still not institutionalized.

The operational engine of the cluster could be a network of rural tourism actors in both countries. The core of the network is to be constituted by operators of accommodation facilities in rural areas. The network should also include tourist agencies, transport companies, entertainment agencies and other organizations involved in tourist product chains. The business goal of the network is to promote rural tourist products available within the joint area on domestic and international markets. The value of the network is that the synergy effect and economy on scale would then be achieved. The practical effect of the network for its members besides better marketing would be exchange with knowledge and best practices.

3 Priority Areas for Economic Development of the Republic of Karelia

Prospects for economic and social development and of international cooperation of the Republic of Karelia are associated with the development of economic structure on the basis of the qualitative development of traditional sectors of the economy, as well as the formation of the modern high-tech industries. Along with the natural resource potential, certain advantages of geographical position the Republic of Karelia has rich research capabilities that can play a major role in the restructuring of the regional economy. From this perspective, it seems obvious that the formation of a new structure of the economy in the Republic of Karelia has to follow the path of a more efficient use of high technologies in the development of natural resource potential and new types of production and services. This chapter presents the analysis of the research capacities and prospects for the formation of the new economy in the Republic of Karelia.

3.1 KNOWLEDGE-INTENSIVE KARELIA

Creation and development of knowledge-intensive production in the Republic of Karelia could be the basis for the formation of new of economic specialization of the region. Also the modernization of traditional sectors is connected with the development of scientific and innovative potential. In this regard, it seems appropriate to ensure the implementation of two priority projects aimed not only at the creation and development of innovation infrastructure, but also to stimulate applied research and the implementation of innovations into production. These projects are the following:

» creation of Innovative and Technological Campus Petrozavodsk State University
» creation of Innovative and Technological Complex Karelian Research Centre of RAS.

Creation of Innovation and Technology campus PSU involves creation-of a number of scientific and innovation centers, including:

- » Centre of Oxide Nanoelectronics;
- » Centre of Energy efficiency and Alternative Energy;
- » Innovation and Technology Park of Engineering Sciences;
- » Forest Technology Transfer Centre;
- » Humanities Center;
- » House of International Cultural Cooperation;
- » Garden and Agricultural Research and Education Centre.

In addition to the above objects of the innovation infrastructure, Petrozavodsk State University already has a number of offices providing execution of research and innovations and bringing them to the implementation in production. These are the IT-park and Student Business Incubator, the Regional Information Technology Center, and the Center PetrSU-Metso Automation Systems at Petrozavodsk State University. The regional branches of the Russian Foundation for Assistance to Small Innovative Companies (Bortnik Fund) and the regional office of the Fund "Skolkovo" operate at Petrozavodsk State University in order to attract investment and funding to support innovative projects.

Innovative and Technological Campus of PetrSU is able to perform a unique model of well-balanced development of knowledge-intensive industries and the unique socio-cultural and natural environment of the Republic of Karelia. Total cost of the project is 4.7 billion rubles.

The creation of Innovative and Technological Complex of the Karelian Research Centre of RAS (ITC of KarRC RAS) aims to build infrastructure for the development of applied researches, development and implementation of innovative technologies and products based on the fundamental studies activities of Karelian Research Centre Institutes. ITC of KarRC RAS will combine the functions of Technopark and Innovative Business Incubator for "growing" small innovative companies.

The priority areas of innovative activities of ITC will be:

- » the development and implementation of environmental technologies, technology protection and restoration of the environment;
- » biotechnological and microbiological researches and developments;
- » study of nanocarbon materials and shungites, development andimplementation of technologies for nanostructuring of shungites and new materials;
- » research in the field of technological mineralogy, development and implementation of those technologies, enrichment and processing of mineral raw materials.

These innovative activities of ITC KarRC RAS are in compliance with priority areas of science, technology and engineering in Russia and the list of critical technologies approved by the President of the Russian Federation, and some of them are unique in Russia. In addition, these activities are already supported by the results of studies and prototypes of innovative products that can be successfully implemented in production and economic use (currently Institutes of KarRC RAS have more than 70 innovative projects, which may

allow to obtain the unique and economically significant innovative products and technologies).

Structure of ITC KarRC RAS is presented in Fig. 3.1.1.

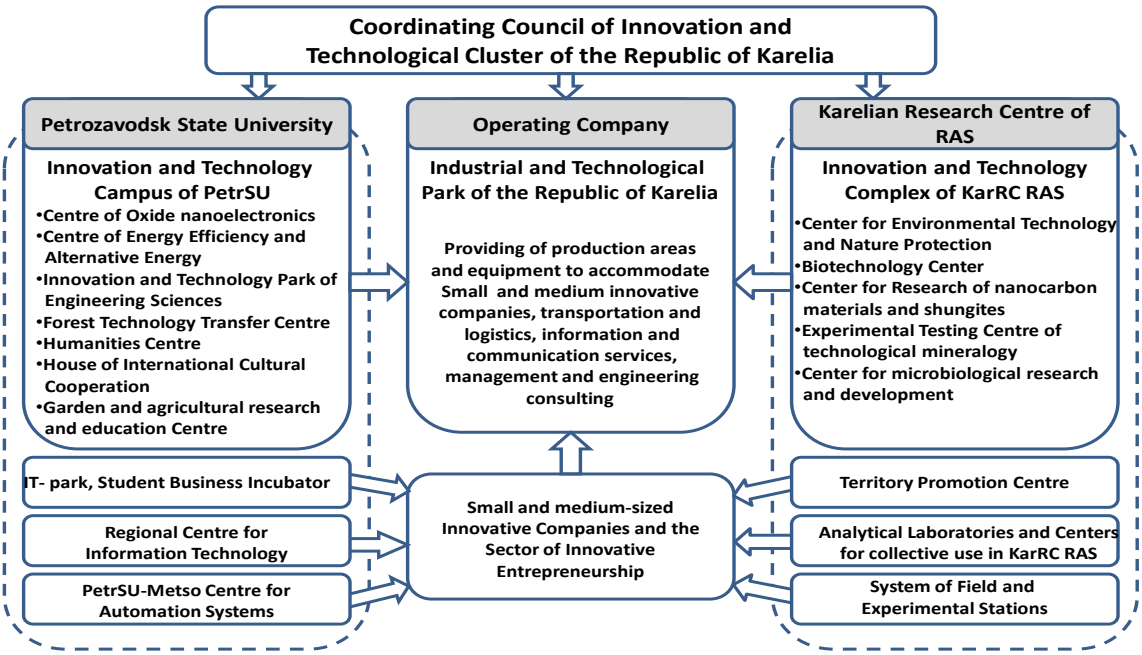


Figure 3.1.2. *Structure of Innovation Cluster in the Republic of Karelia*

Thus, the existing scientific and technical basis, human potential of the Republic of Karelia allows to implement the high-tech projects and the creation of the innovation cluster. Use of natural resources potential based on progressive scientific developments would modernize traditional, develop new and unique productions, which can contribute to the expansion of markets and the formation of its niche on the domestic and international market of high-tech products.

3.2 NEW ECONOMY OF THE REPUBLIC OF KARELIA

The urgent challenge in the current agenda for the Russian economy is to generate new ideas and modernization projects whose implementation would allow to break the long-term trend revealed in decline of the economic potential, ousting of domestically produced goods from local and global markets, and outflow of labour from regions. This challenge acquires particular urgency for Russia's peripheral regions, Republic of Karelia being one of them.

The Republic of Karelia possesses all the necessary pre-conditions and shares opportunities for forming the contours of the "new economy" based on knowledge-intensive industries and technologies. Available potential for building the "new economy" in the Republic of Karelia includes significant scientific and innovative potential and its natural competitive advantages (natural resources and tourism potential, favorable economic and transport-geographical position, rich cultural potential).

The main strategic objective of the modernization strategy is the formation of an economically strong and attractive region that is located on the periphery of Russia and shares common border with EU with high standards of living environment and competitive innovation-oriented economy.

This modernization strategy for the Republic of Karelia could act as a pilot project aimed at modernizing the economy of Russian peripheral regions. The positive experience of its implementation could be disseminated to other Northern and border regions that creates economically strong and socially stable regions on the periphery "belt" of Russia. In terms of economic security, this will significantly reduce the social tension in the peripheral regions, create an economic base for their long-term economic growth backed by technology- and capital-intensive sectors and companies not only operating in the field of import substitution, but also setting up a qualitatively new export potential of the regions. The proposed strategy assumes implementation of measures aimed at fostering cross-border economic relations and creation of competitive cross-border clusters.

The framework of the modernization strategy of the Republic of Karelia is determined by the following two priorities:

1) create favourable conditions and environment for businesses and investors;
2) create new points of growth in the region on the basis of capitalization of latent resources and opportunities.

The first priority is aimed at creating the basic conditions for attracting investment to the Republic of Karelia, and improvement of investment and business climate in the region.

The following tasks have to be completed within the priority:

- create a system for informing entrepreneurs and investors about the opportunities and advantages offered by the Republic of Karelia (web-site "Karelia for Investors");
- introduce a unified rules of procedure for supporting investment projects;
- create and maintain on regular basis a consolidated register of investment sites and premises available for setting up production, warehouse and office activities;

» institutionalize investment officials in the municipal districts of the Republic of Karelia;
» design and create industrial parks in the Republic of Karelia.

Greenfield sites:

1) in the city of Petrozavodsk – for innovative projects in the B2C segment,
2) in Nadvoitsy and Kostomuksha – for small and medium-sized enterprises that are satellite to the city's major production plant as well as those that are independent.

Brownfield-sites in Kondopoga and Segezha - for small and medium-sized enterprises that are satellite to the city's major production plant;

» create territorial development zone in the Republic of Karelia on the basis of economically depressed municipal districts located along the Russian-Finnish border - Suojärvi and Muezersky municipal districts;
» reduce tariffs for "natural" monopolies services and set up a system for public control over the tariffs.

The second priority is the creation of new growth points in the region on the basis of capitalization of latent resources and opportunities. This involves the development and implementation of projects and activities that may be grouped into three strategic lines:

1. Modernization of traditional economic sectors of the Republic of Karelia. Strategic objective is to improve the efficiency of traditional sectors of the economy and modernize core enterprises in monocities.

2. Improving the quality of living environment with the formation of agglomerations of a new type. Strategic objective is to reduce social tension, improve efficiency of communal services and create conditions for attracting highly skilled migrants.

3. Formation of innovation-technological background for the "new economy" in the Republic of Karelia. Strategic objective is to create conditions for development of high-tech production, fostering competitiveness and economic diversification of the region.

Each of the strategic lines may include both infrastructure projects and the projects of modernization of existing enterprises and creation of new industries.

The first two strategic lines are given in details below. Details for the third strategic line Formation of innovation-technological background for the "new economy" in the Republic of Karelia please find in chapter 3.1 "Knowledge -intensive Karelia".

Modernization of traditional economic sectors of the Republic of Karelia

Core traditional sectors of the economy of the Republic of Karelia providing a significant share of tax incomes and more than 40% of all job placements are wood-processing and mining sectors. These sectors are based on the use and processing of local natural re-

sources. Core traditional sectors are dominated by large enterprises many of which are still forming the basis for living of mono-cities. In this regard, the objectives of the modernization of traditional economic sectors are closely connected with the tasks of modernization and development of mono-cities.

In addition to the core traditional sectors, there are sectors within the economy of the Republic of Karelia that are regarded to as traditional as well. Those sectors also create large number of jobs and actively use local resources and production potential. They are: agricultural sector (fish breeding, cattle breeding, poultry farming and forestry), construction materials and building industry, tourism and hospitality sector.

The launch of satellite businesses around the mono-city's core enterprises integrated into the value added chains would increase the efficiency of the latter and create conditions for product diversification. Satellite businesses can be located on unused production sites within the mono-city's core enterprises or at industrial parks specially created for this purpose.

The launch of satellite businesses will help to solve an important social problem arising in the process of modernization of mono-cities i.e. to synchronize the process of modernization of core enterprises (inevitably leading to jobs cut) with projects aimed at creation of new industries and new jobs for redundant employees.

Industries that could be satellite to large pulp and paper plants include but are not limited to production of multilayered cellulose composites and porous fillers, microcrystalline cellulose, hydrolysis products (bio-ethanol), environmentally friendly finishing materials made of lignin and cellulose, cement wood blocks from waste wood for construction purposes, biotech products on the basis of processing by-products, lignosulfonates, hydrolytic lignin, biomass and consumer goods made by recycling pulp and paper waste.

Projects are to be prioritized based on the following criteria:

- » high added value;
- » maximum use of local R&D results and technologies;
- » competitiveness on global markets;
- » growing consumer market for the products;
- » substitution of imported goods;
- » use of local productive capacities and cooperation opportunities for local enterprises.
- » promotion of local brands.

Improving the quality of living environment with the formation of agglomerations of a new type

Projects that has to be implemented within this strategic line of activities are to provide comfortable accommodation facilities, attract labor migrants in the Republic of Karelia, and improve the efficiency of communal services by implementation of energy and heat saving technologies, and new materials and techniques at construction. Improvement of spatial planning policy is also in the line of these activities.

Implementation of this strategic line is to be based on the new **infrastructure model for the development of the Northern regions** being developed by the Institute of Economics KarRC RAS within the federal program of fundamental scientific research. The model includes new approaches and technologies for the developing the Northern territories, aimed at qualitative change in relations to the North as a source of resources, transformation of the spatial organization of the economy and settlement system in the North, securing its attractiveness for investors and comfortable environment for living.

The proposed model allows to minimize costs for maintenance of infrastructure complex and simultaneously enhance its efficiency. Also, an "economy of scale" effect would be reached. Businesses in the region would enter into inter-regional and international value chains.

In practical terms, a new infrastructure model for the development of Northern regions of Russia is aimed, on the one hand, to increase the autonomy of local production, social and housing facilities, on the other hand, to develop network infrastructure elements and implement interregional projects linking regions and setting up a background for interregional economic integration as in national so in international scale.

The increase in autonomy is achieved through the implementation of projects on energy saving, alternative energy, heat and energy accumulation, complex recycling of industrial and household waste into secondary resources, spatial planning, the combination of the traditional "northern" techniques and crafts with new materials (for example, a combination of the traditional "northern" techniques of wooden construction with new materials and energy-saving technologies).

The development of network infrastructure elements is achieved through the implementation of interregional projects for development of information and communication nets and transport infrastructure (including international transport corridors, development of the Northern Sea Route, the network of gas pipelines and others), the creation of interregional industrial clusters as tools for promoting interregional economic integration and enhancing efficiency of interregional and international transport logistics.

The implementation of these activities will, in the mid-term, have an effect in higher economic efficiency and increased investments in infrastructure projects. In the longer term, it will create the necessary prerequisites and conditions for qualitative shift in government policy in the sphere of spatial development of the country, and, most importantly, will provide the necessary incentives for productivity growth and escape from the "rental" model of the Russian economy.

From the point of view of practical implementation of the proposed model, the Republic of Karelia could act as a pilot region. The background for that are scientific and innovative developments in the field of energy saving and autonomous power supply, new construction materials and technologies, waste management, and spatial planning. In addition to that, the Republic of Karelia has extensive protected natural areas (PNA) and areas with limitations of economic activity for which it would be possible to use environmentally safe construction technologies.

The following investment and complex projects of territory development can be offered as priorities:

1. Eco- and ethno-villages in the Republic of Karelia. Such settlements may be established on the basis of inhabited or declining rural areas (especially those that have a high historical and national cultural importance). This project will ensure not only to preserve the culture and life of small population groups, but also to create conditions for attracting young people and tourists, create new workplaces and self-employment.

Development of ecovillages will significantly improve the economic and entrepreneurial activity in the regions of Karelia, create new workplaces, and will be an effective tool for tourism development in Karelia.

2. Development of wood processing and wooden house building cluster. This project can be implemented on the basis of existing wood processing works (for example, on the territory of Suojarvsky and Priazhinsky municipal districts).

3. Knowledge-intensive techniques for reforestation and plantation cultivation of valuable and endangered tree species (for example, Karelian birch). The project is based on the research results in the field of clonal micropropagation of Karelian birch and other valuable and endangered species of wood plants. This technology is developed within the Karelian Research Center and protected by a series of Russian and foreign patents. Technology provides a full guarantee to obtain a decorative patterned structure of wood, and accelerates the production of vegetative cycle by more than 2 times (from 30-40 years to 10-15 years).

4. Autonomous energy supply and energy efficiency. The following projects may be implemented within this field:

- the conversion of district heating infrastructure in settlements of the Republic of Karelia (especially in rural areas) to the use of cogeneration plants and combined furnaces utilizing sawdust and wood and peat pellets as a fuel;
- heat pumps and heat recovery systems;
- the increased use of hydropower potential of small rivers with the installation of mini-hydroelectric power plants;
- environmentally friendly bioenergy technologies aimed at processing of technogenic and biological waste at wastewater treatment plants, fish breeding sites, cattle breeding farms and poultry plants. These technologies include but are not limited to floating vortex aqua reactors, photobioreactors and production of biogas and biodiesel from microalgae biomass (to be implemented in the White sea, urban and industrial wastewater treatment plants).
- wind energy. The highest potential for wind energy generation in the Republic of Karelia is on the White sea. The details for White Sea Wind Park project are given below.

The operator of the White Sea Wind Park project is company Wind Energy Systems company who plans commissioning of two 96 MW wind farms in the area of Kem and Belomorsk in 2017-2018. To date, preliminary survey of areas is done. Sites with an annual average wind speed of more than 3 m/s are selected.

A key issue for the project is the lack professionals available in the Republic of Karelia who are experienced in the construction and operation of high-power wind turbines. One of the solutions could be to arrange training at Petrozavodsk State University in cooperation with international partners.

Thus, the change of difficult socio-economic situation in the Republic of Karelia, in our opinion, is only possible through the development and implementation of the above modernization strategy that ensures, on the one hand, the creation of favorable framework conditions for doing business and attracting investments and, on the other hand, creation of new growth point in the region. Its implementation is justified, above all, the depth of the existing structural problems and imbalances, reducing production capacity (due to the high physical deterioration and obsolescence of fixed assets of leading core enterprises) and intensive labor outflow from the region (primarily young and highly qualified specialists).

Conclusions

Analysis of the socio-economic situation and international cooperation in the Republic of Karelia conducted in this study allows to formulate the following.

Population and its labor potential decline is one of the major challenges to social and economic development of the Republic of Karelia. Along with the general depopulation there is aging, compounded by intense outflow of young people from the northern border and the municipal districts of the Republic of Karelia. Poor efficiency of the education, health systems, labor market and housing form a low socio-labor and spatial mobility of the population of the Republic of Karelia, which reduces the quality and quantity of the labor potential. Promising international projects in this area can become socially oriented projects in the field of vocational education, health, development of social services for all age groups of population.

The development of mining, harvesting and processing sectors, as well as the service sector in the Republic of Karelia is associated with the emergence of new types of competitive products, training of the employees, increasing of labor productivity, the introduction of innovation, participation in international production chains, attracting investment, transfer of technologies, upgrading equipment, organization of joint production, access to new markets, including international.

In terms of investment, Republic of Karelia benefit from its cross-border spatial position. The Republic is ranked 9th among all Russian regions on the volume of investment flows coming from Finland, while it is 62nd by gross regional product and 63rd by population. Investment flows from Finland to the Republic of Karelia are not only high in volume but

also relatively well diversified that is a sign of their sustainability. However, volume and diversification of the flows both vary significantly from year to year and acquire general trend to decrease.

The major driver for investment flows from Finland to the Republic of Karelia are natural advantages of the territory, mainly forest resources. Share of investments that are targeted on logging and primary processing of wood is well above 90% at the present time, and they are quite stable within last three years (2011-2013). Investments in sectors not directly related to natural resources are small in volume and tend to decrease.

Active regional cross-border cooperation in various spheres sets a favourable environment for building cross-border clusters. Wood industry and rural tourism seem to be prominent opportunities for cluster building.

Wood industry is a traditional sector for the Republic of Karelia. Logging companies, plant and paper mills, research and educational institutions, forestry machinery building plant and other actors to set up the cluster are operational in the Republic but many of them need to be modernized.

Rural tourism is young but rapidly developing sector in the Republic of Karelia. The Republic shares natural conditions for rural tourism development similar to Finland. The most prospective areas where the cluster could be localized are those that are adjacent to border crossing points since the border appears to be one of the major spatial attractors for guest houses in the Republic of Karelia. The operational engine of the cluster could be a network of rural tourism actors in both countries. The core of the network is to be constituted by operators of accommodation facilities in rural areas. The network should also include tourist agencies, transport companies, entertainment agencies and other organizations involved in tourist product chains.

Technological base and scientific potential of the Republic of Karelia can be the prerequisite for the realization of high-tech projects and the creation of an innovation cluster. The introduction of advanced technologies in the production and processing of natural resources will contribute to the modernization of traditional as well as the emergence of new types of production in the economic structure of the Republic of Karelia. Eventually, it will allow to get its niche markets and enter new high-tech markets.

Improving the socio-economic situation in the Republic of Karelia is associated with the implementation of a comprehensive strategy for the modernization of the regional economy. The strategy provides the restructuring of the economy by improving conditions for attracting investment, creating a favorable business climate, renewal of fixed assets, using the results of scientific research and other activities. Implementation of this strategy will form the new structure of the economy of the Republic of Karelia and improve the basic social and economic indicators of the region.

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Karelia

The project From Borders to Shared Space – BOSS strengthens co-operation between universities of applied sciences and the working life in the border districts. This is realised with the help of new implementation models within research, development and innovation. The objective is to build a steadily developing RDI partnership network for the border districts and to discover new operations models for the co-operation between universities of applied sciences and the working life, together with seven other universities of applied sciences operating in the geographical border districts. Karelia University of Applied Sciences focuses on the border districts of Russia. The districts of the Republic of Karelia and the south-eastern metropolis of St Petersburg are its special focus area. The duration of the project is 1 January 2014 - 31 December 2015. The Finnish Ministry of Culture and education funds the project.

This report presents the modern and future trends of social and economic development of the Republic of Karelia. The main results of the analysis of demographic processes, labor market development and the social sphere are presented on the basis of relevant statistics. One of the main results of the study is the characteristic of economic development of key industries with providing general information on largest enterprises. The paper presents new directions of socio-economic development of the Republic of Karelia through the use of scientific, technical and natural potential of the Republic of Karelia. The great importance in the study is paid to cross-border cooperation in the economic and social sphere.

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BOSS Raja-alueiden TKI-verkostojen vahvistaminen