



**BALTIC PALETTE II
ACTION GROUP 2
TRANSPORT CORRIDORS NETWORK**

Russian National Group



**NEEDS FOR TRANSPORT INFRASTRUCTURE
INVESTMENTS IN THE RUSSIAN
BALTIC PALETTE REGIONS**

FINAL REPORT

(November 2003- May 2004)



Natalia Gutman

RosNIPI of Urbanistica
e-mail: goutman@rednet.ru



Juri Koudrjashov, Mikhail Pimonenko

Association of Nord-West of Russia
e-mail: pimw@wnet.ru

Russia
St. Petersburg

May 2004

CONTENTS:

	Pages
PREFACE	3
PART ONE – GENERAL DATA AND INFORMATION	4
St. Petersburg	4
Leningrad region	7
CONCLUSIONS	10
SOURCES FOR 1-st PART	12
PART TWO - INVESTMENTS	13
RAILWAYS	14
ROAD SYSTEM	18
AIR TRANSPORT	23
PIPELINES	26
PORTS	29
Sea ports	29
River ports	34
APPENDIX – TABLE OF INVESTMENTS	37
SOURCES FOR 2-d PART	39
PART THREE - TRANSPORT AND ACCESSIBILITY OF THE TERRITORIES OF THE CITY OF ST.PETERSBURG AND LENINGRAD REGION – TEAM WORK WITH AG 1 PPPP*/	40

*/ (pages 40-47 are prepared by Mr. M. Petrovich , petrovich@nipigrad.spb.ru

PREFACE

Transport corridors Network group's (AG2) Baltic Palette-II phase 3 report includes brief socio-economic information on the region, based on St. Petersburg Committee of State Statistics, and planned investments for infrastructure development measures in St. Petersburg and Leningrad region, established in the phase 1 report. Phase 3 report includes also the additional chapter about public transport and transport accessibility on the territories of the City of Saint-Petersburg and Leningrad Region made in co-operation both AG 1 «Palette Polycentric Platform Project» and AG2 «Transport Corridors Network».

The study was mainly based on the plans of Transport Committees of St.-Petersburg and Leningrad region, the October Railway management, Regional management "Roads of Northern-West of Russia", Committee of architecture and town-planning of Leningrad region, Road Committee of Leningrad region, Conceptual Programs of Government of Russian Federation and both subjects of Federation, co-operation projects for regional spatial planning and transport development.

The condition of transport infrastructure and cross-border points of both these subjects of RF are very important from the state point of view as St.-Petersburg and Leningrad Region are the main links of chain of Russian contacts with other countries in the Baltic Region and EU countries as a whole. The Government of Russian Federation estimated the current situation and formulated the main tendency of investments for infrastructure in the Conception of the Federal Program "Transport and Hardware for Cargo Transit within the area of the Gulf of Finland. The modernisation of Russian transport system on 2002-2010".

Since 1992, The City of the St. Petersburg and the Leningrad region are both subjects of the Russian Federation on the Baltic coast.

To achieve the greatest possible efficiency of co-operation of two subjects of Federation an overall view should be adopted as the guiding principle of spatial planning and improvement of infrastructure.

Yet the traffic congestion on the exit from the City of St.-Petersburg to outside directions and the transit flows following through the Centre of the City are the great problem and the main bottleneck of transport network on territory of the City of St.-Petersburg and adjoining to St.-Petersburg.

In spite of the City of St.-Petersburg and The Leningrad region are characterised by a high level of transport mastering, in the beginning of 1990 years the transport complex of both subjects of Federation was not capable of providing for the cargo passage in the total necessary volume: according to Federal Program "Transport and Hardware for Cargo Transit within the area of the Gulf of Finland", in the next few years, the cargo transit via St.-Petersburg and the Leningrad Region is to increase by at least 100 million tons per year.

PART ONE - GENERAL DATA AND INFORMATION ABOUT REGION.

SAINT-PETERSBURG.

Saint-Petersburg occupies the area of 1 400 sq. km.
Population density in the city is equal to 3300 inhabitants at 1 sq. km.

Population

In 2002 Saint-Petersburg had 4580,7 thousands of inhabitants.
In the table below is shown number of inhabitants (in thousands people) for different years. (At the beginning of 2002 – 4596 thousand people).

	1990	1995	2000	2002
Saint-Petersburg	5002,4	4768,7	4660,8	4580,7
Russian Federation	147662	147938	145559	144000

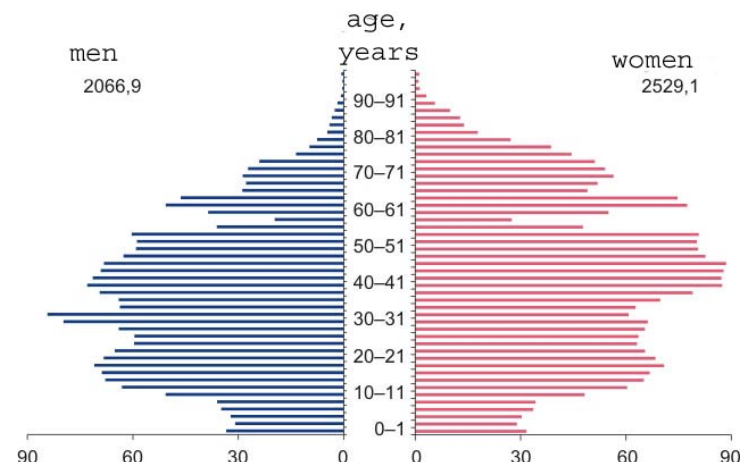
Share of age groups in population structure at 2002 year

Age	%%
0-14	14,0
15-19	7,3
20-64	64,3
65 and more	14,4

Number of men and women at 2002 year.:

	Thousand people	%%
Total	4581	100
Men	2061	45
Women	2520	55

AGE STRUCTURE OF MEN AND WOMEN INHABITANTS IN SAINT-PETERSBURG IN 2002



Excess of birth, years

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
total	70,1	69,6	68,3	64,3	64,5	66,1	68,4	69,4	69,3	67,8	66,5
men	65,2	64,4	62,6	58,1	58,1	59,9	62,6	64,2	63,8	62,0	60,3
w	74,3	74,1	73,6	70,7	71,2	72,3	73,8	74,1	74,4	73,5	72,9

Migration in thousand people:

	1998	1999	2000	2001	2002
Number of joined inhabit.	67,7	60,7	57,3	51,0	49,0
Number of left Inhabitants.	53,0	51,4	45,9	40,4	40

Forecast of Saint-Petersburg population growth

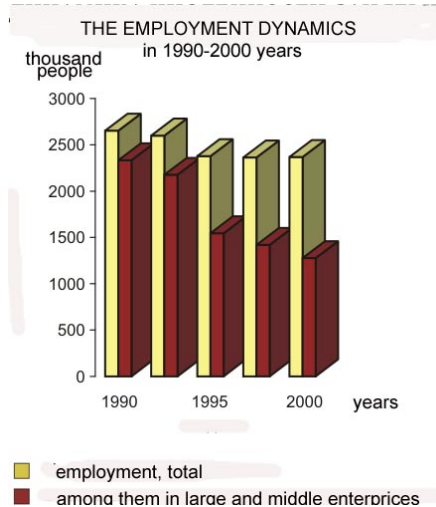
Year	Type of forecast */		
	Pessimistic	Realistic	Optimistic.
2010	4343	4430	4510
2025	3863	4253	4745

*/ Official site <http://www.cedipt.spb.ru:2002/materials/>

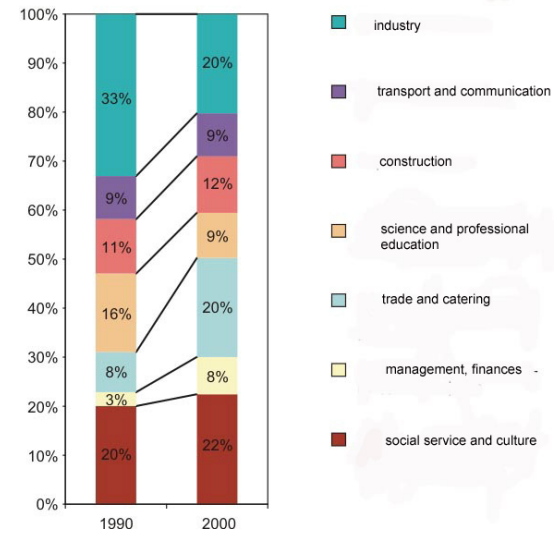
Labour resources

Inhabitants employment

In 2002 year the number of Saint Petersburg inhabitants, active for economics, was 2417,5 thousands of people; 2381,7 thousands of them were employed, including 20% in industry.



CHANGE OF EMPLOYMENT STRUCTURE IN BRANCHES in 1990-2000 years



Level of education

There is number of employed Saint Petersburg inhabitants in 2000 year, distributed in education level.

	%%
Employed, total	100,0
Among them have educational level:	
high professional	38,2
unfinished high professional	3,2
secondary professional	31,9
secondary general	22,3

Pendulum migration

The year average everyday balance (pendulum migration) was: in 2001 year 90,4 thousand people; in 2002 year – 88,6 thousand people.

	2001	2002
Daily arrival to Saint-Petersburg, thousand people.	91,9	90,3
Daily leaving of Saint-Petersburg, thousand people.	1,5	1,7

The main economical indicators

Gross Regional Product (GRP) – is the basic indicator of social-economical development of Russian Federation subjects characterising the result of product manufacturing and services during definite period.

GRP was 205,4 milliard rubbles in 2000 year, that was 43914 rubbles per capita or 86740 rubbles per working person.

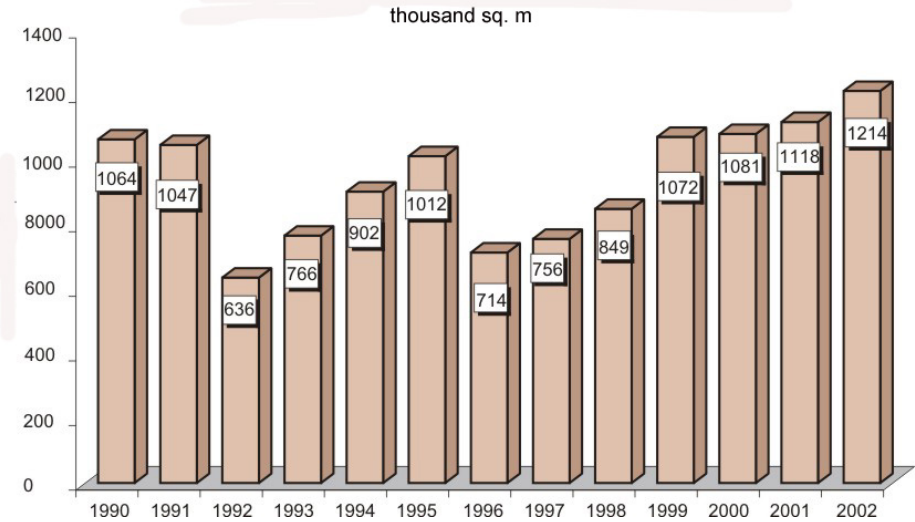
Funded income was 37865,3 man. Rubbles in the City of Saint-Petersburg in 2000 year, including 18,4 % from physical persons (employed population) , 33,6% from enterprises and organisations; 48,0 % - other incomes.

Export was 17,5% of the volume of industry product in 2000 year.

Level of living.

Indicators	2000	2002
Constructed dwelling-houses with living-space, in thousand sq. M.	1080,9	1213,7
Constructed apartments, thousands.	15,2	

HOUSE CONSTRUCTION DYNAMICS



Registered private cars

	1990	1995	2000	2002
Thousand units	281	613,7	850,1	896
Units per 1000 persons	56	129	182	195

LENINGRAD REGION

Leningrad region area is 83,9 thousand sq. km. There are 2972 settlements, 120 of which have population more 2000 inhabitants. Population density is equal to 20 people per sq. km.

Population.

In 2001 year number of Leningrad region inhabitants was 1649,7 thousand people, 1307,5 thousand of which were living in settlements with population more than 2000 people.

Change of inhabitants number, thousand people:

	1990	1995	2000	2002
Leningrad region	1662,8	1668,1	1674	1649,7
Russian Federation	147662	147938	145559	144000

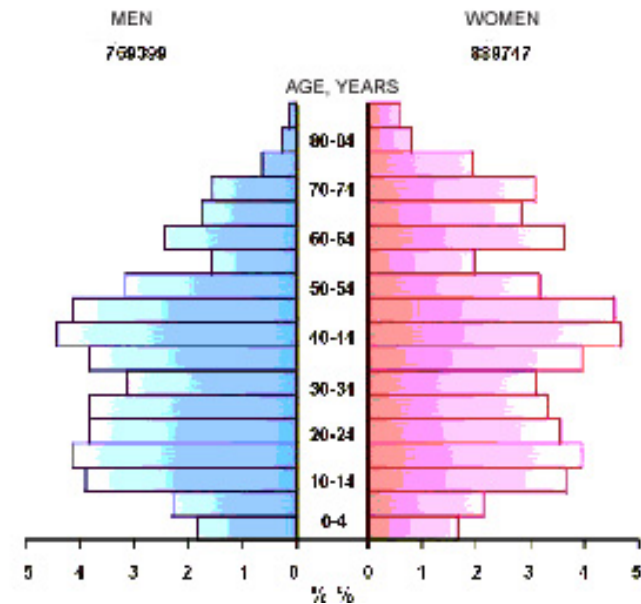
Age structure of population in 2000 year:

Age	%%
0-14	15,4
15-19	8,1
20-64	62,9
65 and more	13,6

Number of men and women in 2000 year.:

	Thousand people	%
Total	1659	100
Incl. Men	769	46
Women	890	54

AGE STRUCTURE OF MEN AND WOMEN INHABITANTS IN LENINGRAD REGION 2001



Excess of birth, years

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
total	68,7	68,1	66,0	62,5	61,3	62,3	65,0	66,0	66,4	63,9	62,9
men	63,0	62,1	59,7	55,7	54,7	55,5	58,8	60,0	60,4	57,6	56,2
w	74,0	73,8	72,6	70,4	69,2	70,1	71,7	72,4	72,0	71,0	70,8

Population migration, in thousand people:

	1996	1997	1998	1999	2000
Number of joined inhabitants	10,8	8,4	7,3	4,75	4,7
Number of left inhabitants	3,55	2,3	2,3	2,3	1,7

Leningrad region population forecast

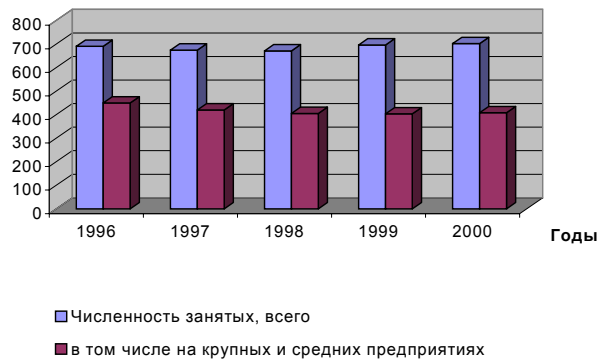
Years	Type of forecast Leningrad Region			Russian Federation
	Pessimistic	Average	Optimistic	
2010	1555	1598	1762	
2025	1401	1682	2096	137000

Labour resources.

Inhabitants employment

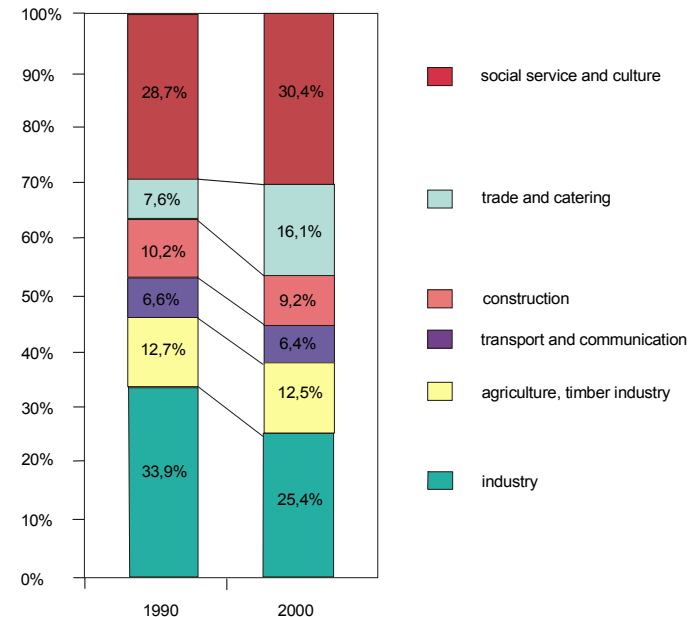
In 2002 year the number of Leningrad region inhabitants, active for economics, was 784,1 thousands of people; 701,6 thousands of them were employed, including 178,0 (23%) in industry.

THE EMPLOYMENT DYNAMICS OF LENINGRAD REGION IN 1996-2000 years.



CHANGE OF EMPLOYMENT STRUCTURE IN BRANCHES

in 1990 - 2000 years



Level of education

There is number of employed Leningrad region inhabitants in 2000 year, distributed in education level.

	%%
Employed, total	100
Among them have educational level:	
high professional	18,3
unfinished high professional	4,9
secondary professional	31,7
Secondary general	31,8

The main economical indicators

Gross Regional Product (GRP) – is the basic indicator of social-economical development of Russian Federation subjects that is characterising the result of product manufacturing and services during definite period.

GRP was 59,34 milliard rubbles in 2000 year, that was 35527 rubbles per capita or 84579 rubbles per working person.

Funded Income of Leningrad Region was 9253,6 mln. rubbles in 2000 year, including 15,8 % from physical persons (employed population), 37,9% from enterprises and organisations; 46,3 % - other incomes.

Export was 60% of the volume of industry product of Leningrad Region in 2000 year.

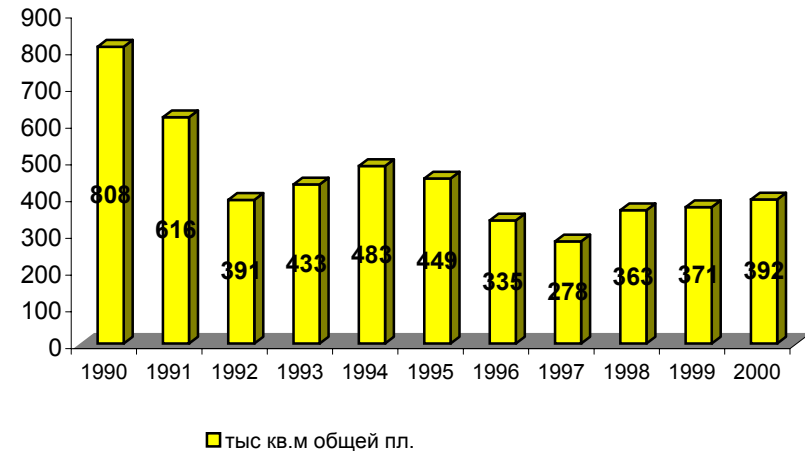
Level of living.

Indicators	2000
Constructed dwelling-houses with living-space, in thousand sq. M.	391,5
Constructed apartments, thousands.	5,4

Registered private cars

	1990	1995	2000	2002
Thousand units	74,4	112,4	232	256
Units per 1000 persons	45	67	139	155

DINAMICS OF LENINGRAD REGION HOUSING CONSTRUCTION in 1990-2000 years



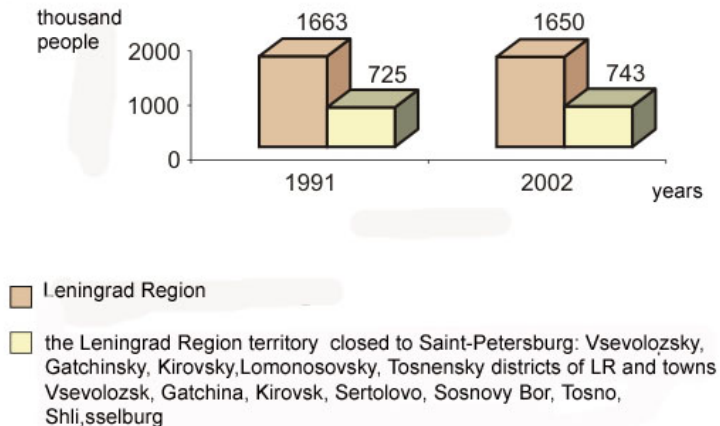
CONCLUSIONS

In the “Baltic Palette” project Leningrad region in whole is considered as a “capital area” of Saint-Petersburg. Though, in reality, “Saint-Petersburg city region” spreads over nearly 20% of all Leningrad region territory with 50% of Leningrad region urban inhabitants. The most part of inhabitant movements takes place on this territory, due to steady pendulum labour migration (nearly 200 thousand Leningrad region inhabitants are employees of Saint-Petersburg enterprises, and nearly 50 thousand inhabitants are the students of Saint-Petersburg universities and institutes) and recreation migration. The significant growth of Leningrad region population is not forecasted, but the part of urban inhabitants would be increased.

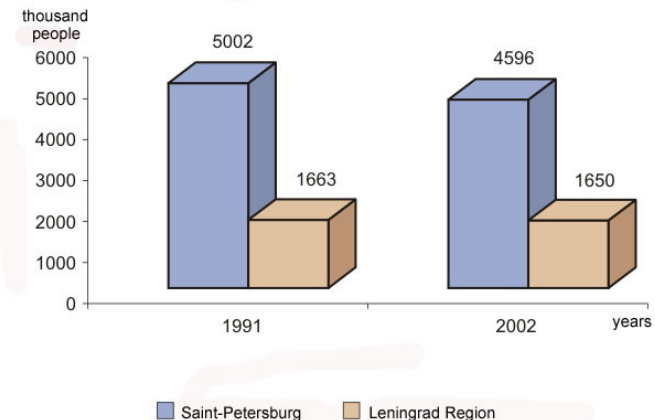
Population forecast of Saint-Petersburg and Leningrad region in 1000 persons

	Type of forecast		
	Pessimistic	Realistic	Optimistic.
2010 year			
St. Petersburg	4343	4430	4510
Leningrad Region	1555	1598	1762
Total, 2010	5898	6028	6272
2025 year			
St. Petersburg	3863	4253	4745
Leningrad Region	1401	1682	2096
Total, 2025	5264	5935	6841

POPULATION OF LENINGRAD REGION TERRITORY CLOSED TO SAINT-PETERSBURG IN 1991 AND IN 2002



SAINT-PETERSBURG AND LENINGRAD REGION POPULATION in 1991 and in 2002



Inhabitants employment, active for economics in thousand people, 2002

	active	employed
St. Petersburg	2417,5	2381,7
Leningrad Region	784,1	701,6
Total, 2002	3201,6	3083,3

Labour market after branch – Industry, Service and Other branches in %%

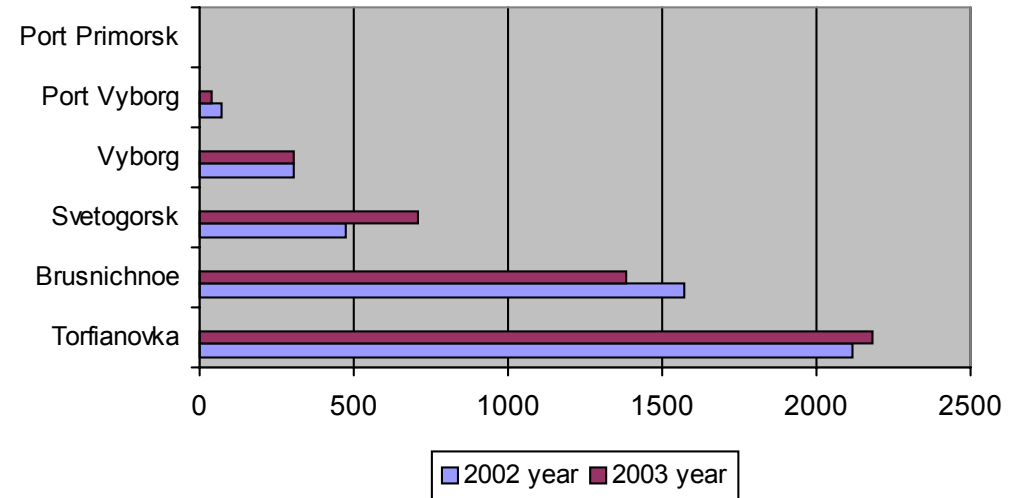
Branches	1990	2000
St. Petersburg		
Industry	44	32
Service	37	51
Other	19	17
Total	100	100
Leningrad Region		
Industry	44	35
Service	26	35
Other	30	30
Total	100	100

International cross border passengers between Russian and Finland

According information of Vyborg custom 4.538.600 passengers in 2002 year, 4.629.600 passengers in 2003 year crossed the Russian-Finnish border by all modes of transport.

There are 6 cross-border points between Finland and Russia: Tofianovka-Vaalimaa (road), Buslovskaya-Vainikkala (railway), Brusnichnoe-Nuyamaa (road), Svetogorsk – Imatra (railway, road), port Vyborg, port Primorsk.

Cross-border passengers, 1000 persons



SOURCES FOR FIRST PART

1. Leningrad Region [<http://www.lenobl.ru>]
2. Saint-Petersburg [<http://www.spb.ru>]
3. Saint-Petersburg long-term economics and social development forecast, International economics research Centre, "Leontiev's Centre", Saint-Petersburg, 2003.
4. St. Petersburg. State-of-the-Art in Urban Planning. Atlas. Urban Planning and Architectural Committee ZAO "Petersburgsky NIPIgrad"
5. Saint-Petersburg and Leningrad region economics and social data in January-May 2003, Russian state statistics Committee. Saint-Petersburg committee of state statistics, May of 2003.
6. Transportations. Saint-Petersburg & Leningrad Region, handbook, ZAO Teleinfo, 2003
7. Spatial planning statistics, vol. 1. CSD "North-West", 2002
8. Administrative-territorial structure of Leningrad region, 2000
9. Population and society. Human being demography and ecology Centre of economics forecasting institute RAS, Inf. Bul. Number 56, August 200, [<http://www.demoscope.ru>]
10. Leningrad region, statistics year report, Russian state statistics Committee. Saint-Petersburg committee of state statistics, 2001, official edition.
11. Saint Petersburg in 2000 year, Russian state statistics Committee. Saint-Petersburg committee of state statistics, 2001, official edition.
12. "The Concept of Social Economic and Town-Planning Development of the Leningrad Region " RosNIPI of Urbanistica, 1998
13. "General Plan of Leningrad and Leningrad region till 2005", LenNIPI of Genplan, 1987

PART TWO - INVESTMENTS

Transportation corridors

In 1993, The Treaty on the EU established Trans-European Network (TEN) in transportation as a formal EU objective. After the Crete conference in 1994 and Helsinki conference in 1997, ten Pan-European Corridors or Crete Corridors (PANs) were defined after the concept of TENs.

Russian section of the Crete international transport corridor 9 crosses the territory of Leningrad Region from the Northwest to the Southeast. St. Petersburg is the main rail, sea, river, air and road juncture of the Regional corridor route. The route of the corridor № 9 connects West and North European countries with Moscow, a capital of Russia, the Black sea ports.

The intermodal corridor 9 is connected with Tallinn corridor through the territory of Leningrad region (in west direction motorway E-20 "Narva" and railway St. Petersburg- Tallinn). It is a section of Via Hanseatica corridor at the same time (St. Petersburg - Narva - Tartu - Riga - Kaliningrad – Gdansk -Lubeck). Corridor 9 is connected to Via Baltica through Tallinn corridor.

Through the territory of Leningrad region and the City of St. Petersburg, corridor № 9 is connected with the Murmansk corridor leading to ports of the Barents and White Seas, and with the Eastern corridor (Vologda destination), leading to the Volga River area and the Urals. A local transport corridor runs northwards from St. Petersburg connecting with the City of Petrozavodsk, the capital of Karelia. On these directions all mentioned above corridors consist of federal automobile routes (local - territorial road) and railways.

In compliance the Russian Federation Government Program "The principal directions of forming and development of international transportation corridors on territory of Russia" the system of international transportation corridors on the territory of Russia includes three Euro-Asia corridors named "North-South", "Transsib" and "North sea way", two corridors of TEN/TINA - № 1 and № 9 and corridors

connecting Northeast provinces of China through the Russian Far East ports with ports of Asia Pacific Region. According to this Program the section of intermodal Pan-European corridor №9 (Finnish border-St.-Petersburg-Moscow) is a part of the Euro-Asian corridor "North-South", connecting region of Persian Gulf, India and Pakistan with countries of Central and North Europe through the territory of Russian Federation.

Transport infrastructure development

During the last few planning periods a number of large infrastructure projects have been launched to benefit the region, particularly in regard to development of seaports and improvement of railways and Federal roads on north-western, south and east directions.

It should be pointed out however, that a great deal of work is yet to be done to achieve the significant improvements of transport network of the Region, where many links and motorway sections remain to be built or to be reconstructed. This is especially true for the St.-Petersburg's transport junction and also for transports to new seaports of the Gulf of Finland and to cross-border point in Svetogorsk. Some by-passes must be built or reconstructed in order to avoid bottlenecks in the cities that are situated on the main Federal routes.

All authors of projects and programs consider that the entire country stands to benefit by ensuring the proper function of the transport infrastructure in St. Petersburg and Leningrad Region, if it is taken into account the role of this Region as the north-western gateway of Russia.

The following main bottlenecks and problems of transportation system of this region need investments.

Investment volume (costs) was gathered from various sources: planning indicators of committees and departments of different branches, project documentation or investment projects for transport objects construction, from interviews with representatives of managing transport companies published in official issues "Business Petersburg", "Commerçant" etc. Or received during business negotiations. Correlation Euro/Rouble – 35,6, Euro/USD – 1,16 on 06.10.03.

RAILWAYS

SAINT PETERSBURG

The railway by-pass of the City of St.- Petersburg.

The railway by-pass of the St. Petersburg railway junction was proposed in the General plan of development of Leningrad and Leningrad Region on 2005 (NIPI of Genplan of St. Petersburg, 1985-1987). This proposal was seconded and developed by “The concept of socio-economic and city-construction development of Leningrad Region on 2005” (RosNIPI of Urbanistica, 1995-1998). The construction of by-pass of the St.-Petersburg railway junction is very important as at present all goods trains go from the south to north through large housing districts situated in the north of the City and through the Kurortny (health-resort) district of the City of St. Petersburg. Increasing traffic towards the expanding ports zones in Primorsk and Vysotsk will entail increasing numbers of goods trains. As a result, environment will have become worse in the north housing and Kurortny districts due to great numbers of trains. Moreover the situation will have become worse in settlements of the north suburb zone of the City of St. Petersburg, in peoples' favourite places for summer and winter weekends.

However such a global measure as construction of a railway by-pass of the City of St. Petersburg, passing through valuable nature suburb's territories must be discussed on feasibility study and have connection with ideas of development of new General plan that is being worked up at present.

According to approximate counting, the railway by-pass construction costs could reach 500 mln. Euro. Realisation between 2011-2025 years is possible.

New railway station Ladozsky in St. Petersburg.

New railway station has been operated since May 2003.

Reconstruction of railways to the port in St. Petersburg.

Investments of 180 mln. Euro till the year 2010

LENINGRAD REGION

RAILWAY NETWORK IN THE WEST OF REGION

The construction of new and reconstruction of existing railways and stations are connected mainly with creation of new port zones on the coast of the Luga Bay.

1. Railway line (section) Gatchina Baltic- Weimarn-Ivangorog-Narva.

Increasing of traffic on this section as a part of way to port of Ust'-Luga indicates that it should be reinforced with an additional (second) track. It is also planned to electrify this line. It is an important direction not only for supplying port complex of Ust'-Luga but for the international route Saint-Petersburg-Tallinn, too.

2. Additional rail capacity of lines (sections) Weimarn-Kotly-Ust'-Luga and Kotly-Kalische.

As the first step, the capacity of these sections will be strengthened by fundamental repair of tracks between stations and within stations, station's equipment, rail-bridges. It is foreseen to renovate the auto-block and navigation's systems. The second step is the electrification of these lines.

3. Construction of the station Krakolie.

The construction of goods railway station (terminal) Krakolie for service the seaports Ust'-Luga and Vistino.

4. Railway line Krakolie -Vistino.

This new one-track electrified railway branch to terminals projected on eastern coast of the Luga bay.

5. Railway by-pass of the City of Sosnovy Bor (Kalische station).

It is proposed to build an electrified railway by-pass of the City of Sosnovy Bor that aimed to avoid possible trend situations in the area of influence of nuclear power station.

Approximate costs of the measures points 1-5 are 763 mln. Euro, incl. 274 mln. till 2010 and 489 mln. till 2025.

Additional railway capacity of the line Mga-Sonkovo-Moscow.

This direction is supposed to be strengthened by constructing a second track and electrification. The result of this construction will allow carrying a significant part of goods trains from the main line Moscow-Saint-Petersburg. Therefore increasing of numbers of the high-speed passenger trains between Moscow and St. Petersburg will be possible.

Investments volume is 26 mln. Euro till 2010.

RAILWAY NETWORK ON THE KARELIAN ISTHMUS

The construction of new and reconstruction of existing railways and stations are connected mainly with creation the new port zones on the coast of Finnish Gulf and organisation the high-speed trains on the direction Moscow-Saint-Petersburg-Helsinki.

Reconstruction of the line Ushkovo-Primorsk-Vyborg with construction of the station Vysotsk II.

The reconstruction is supposed to build the second track on this section, new railway bridges and to upgrade the station's equipment. The electrification is supposed too. This measure is allowed to pass the goods trains to the port zones and to free the main line St. Petersburg-Vyborg-Helsinki for high-speed trains and more intensive traffic of suburb trains.

Approximate costs of the reconstruction are 228 mln. Euro, incl. 90 mln. till 2010 and 138 mln. till 2025.

Reconstruction and construction of railway stations in developed port zones of Karelian isthmus (stations Ermilovskaya, Sea port Primorsk, Vysotsk I, Portovaya).

Estimated investments – 210 mln. Euro, incl. 125 mln. Euro till 2010, 85 mln. Euro till 2025.

Reconstruction of the line Ushkovo-Vyborg-Buslovskaya.

Reconstruction foresees a construction of the third main track for high-speed trains.

Approximate costs of the reconstruction are 185 mln. Euro till 2010.

Railway Vyborg-Zitkovo-Sosnovo.

At present an extension of one-track section of Vyborg - Zitkovo up to a railway line St. Petersburg-Prizorsk-Sortavala with its electrification is discussed in connection with development of Vysotsk and Primorsk seaports' capacity. The proposal of "The concept of socio-economic and city-construction development of Leningrad Region on 2005" was to use this line for organisation the ring routs of suburb trains for better service of week-end commuters on Karelian Isthmus.

Estimated costs of the construction – 225 mln. Euro, incl. 80 mln. till 2010 and 145 mln. till 2025.

Railways on the north of Karelian Isthmus.

According to programs by October Railway Management, sections Vyborg-Kamennogorsk-Hiitola and Hiitola-Kuznechnoe will be electrified, and second tracks will be built. The railway by-pass of Hiitola station connecting line of Kamennogorsk-Hiitola and St. Petersburg - Prizorsk - Sortavala is proposed to be constructed.

Estimated costs of the reconstruction and construction of connecting section – 208 mln. Euro, incl. 98 mln. till 2010 and 110 mln. till 2025.

Railway line St-Petersburg - Prizorsk - Sortavala.

It is planned to construct the second track on the section from Sosnovo till Hiitola.

Estimated costs of the construction – 171 mln. Euro, incl. 71 mln. till 2010 and 100 mln. till 2025.

RAILWAY NETWORK OF EASTERN PART OF REGION

Electrification of the line Lodeynoe Pole-Petrozavodsk (Karelia).

Electrification is completed.

CONCEPTUAL NEW DIRECTIONS

Railway connection of the south and west directions - Luga-Weimarn

The construction of new double-track line was proposed for the trains to seaports of Ust'-Luga and Vistino from the east and south directions to pass by the St. Petersburg's overloaded junction. This line will also improve the transport facilities for the people living alongside Luga river and will influence creating new working places

New railway line Podporoj'e-Wytegra (Archangelsk Region).

The construction of this line, an interesting and important proposal, will have an influence on the traffic network in the North-Western Region altogether, as it will supply more shorter way to port terminals of the City of St. Petersburg and of Leningrad Region for North and East Regions of RF.

There is no information of investments for realization of new conceptual projects.

RAILWAY INVESTMENTS

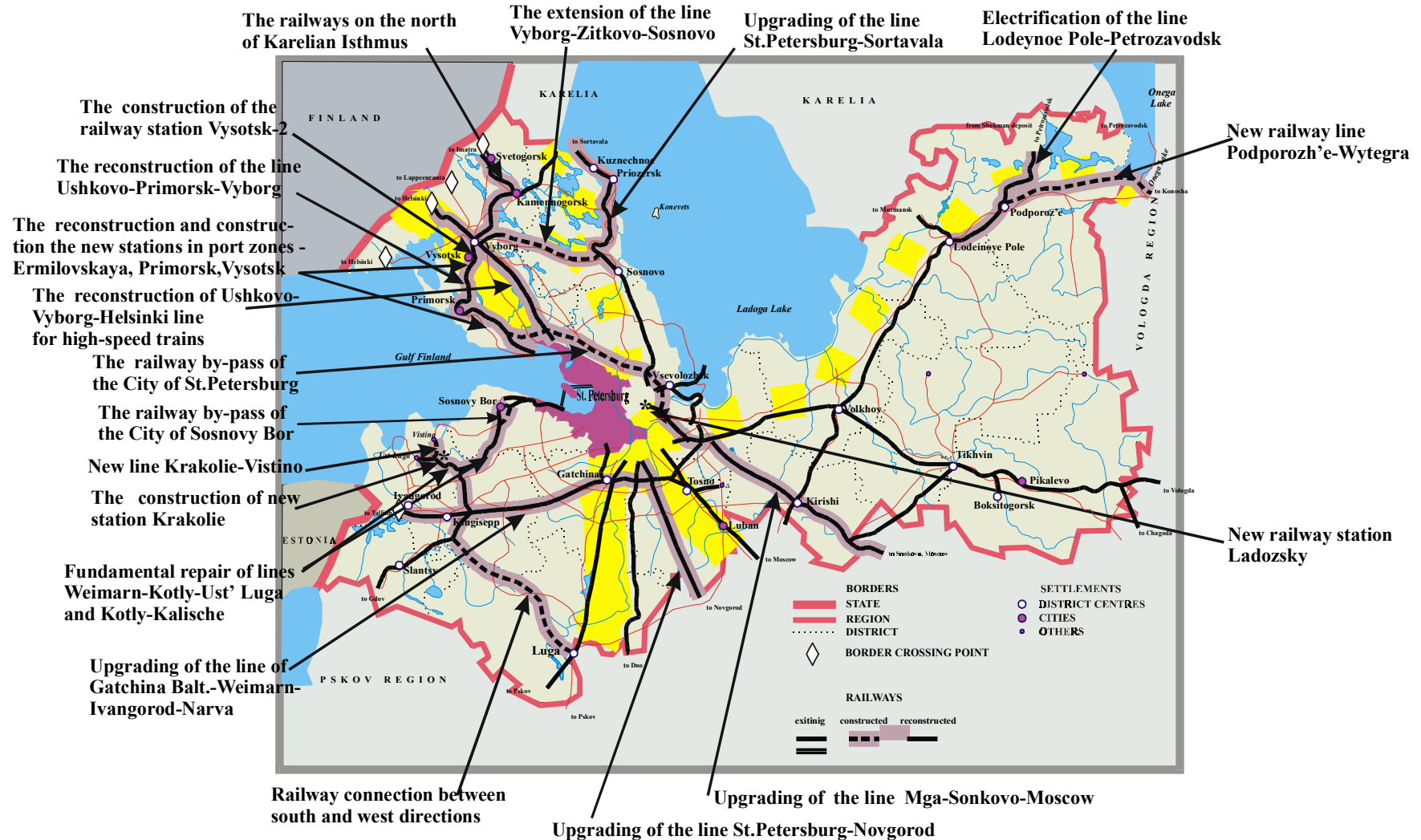


Figure 1. Railway network of Leningrad Region
 Source "The Concept of Social Economic and Town Planning Development of the Leningrad Region"
 RosNIPI of Urbanistica, 1998

ROAD SYSTEM

SAINT-PETERSBURG

Construction of the St. Petersburg by-pass

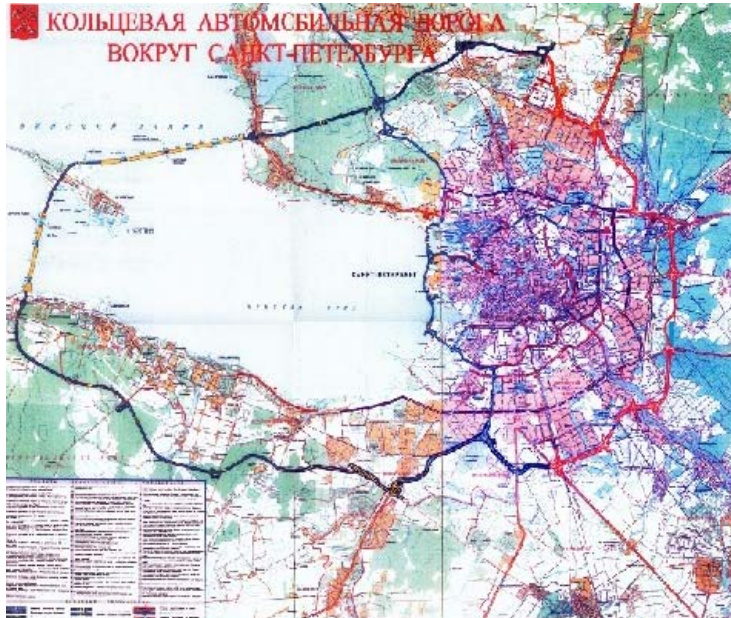


Figure 2. By-pass of the City of Saint-Petersburg

The by-pass of St. Petersburg is the one of the main sections of the Federal road system not only in the Leningrad region but also in the entire Northwest Russia. The by-pass construction has begun in the last year, the North section is ready, the East is being built. Finishing of half-ring construction is estimated in the nearest future. Construction of the West and South sections is connected with the finishing of dam's construction in the Finnish Gulf.

Total investments volume 2320 mln. Euro till 2005. 310 mln. Euro has already been invested. 150 mln. Euro are to be invested in 2004

Reconstruction of the road crossing over a railway approaching to St. Petersburg sea trade port

Investments volume – 18,8 mln. Euro till 2005.

Construction of the new entry to the city from Moskovskoe chaussee

Investments volume – 36,5 mln. Euro till 2005.

LENINGRAD REGION

MOTORWAY NETWORK ON THE KARELIAN ISTHMUS

Karelian Isthmus motorway system improving is connected with export-import transit cargo flows following through the international automobile cross-border points on the Russian-Finnish border and with providing of approaches to the ports in Finnish Gulf. The main artery of the Karelian Isthmus is the federal road E18 "Scandinavia".

Upgrading the E18 ("Scandinavia") to high standard (the I category).

The existing traffic intensity on the motorway reaches 20000 vehicles in 24 hours. The accounts show a possible increasing of the traffic intensity up to 30000 vehicles in the nearest ten years, therefore an improving of the motorway in terms of rising of the technical category and users service level is necessary, especially paying attention that it is the first section of the Crete intermodal transport corridor №9 on the territory of the Russian Federation, a link of the European transport network. The main object of an international project "E18 - co-operation road", performed with the program INTERREG IIC in 2000-2001, was to create equal services for users along the entire extension from Oslo to St. Petersburg, i. e. the road's technical condition, quality of services and tourists attraction. In this project, the RosNIPI Urbanistica institute developed a pilot project for the Vyborg - Torfianovka section. Developing the "E18 - co-operation road" project, the "Scheme of road service objects development along the E18 route on the district's territory" was worked out, where the places for new road service objects were marked. This work was financed by

Municipality "Vyborg District of the Leningrad Region". The project had got an approval from the Leningrad Region Government.

Investments volume – 77,5 mln. Euro, incl. 38,2 mln. till 2010, 38,8 mln. till 2025.

A by-pass of the City of Vyborg

The first section of the by-pass of the City of Vyborg, including a new bridge through the Saima Channel, was put in operation two years ago. Now a second section (the connection the main route of E-18 from the side of St. Petersburg with the first section) is under construction. On its finishing, construction of the last section of the by-pass to the North of Vyborg will begin.

Investments volume – 11,5 mln. Euro.

The logistics terminal in Vyborg.

There is a project of the logistics terminal in the transport corridor № 9 in the South suburb of the City of Vyborg. Unfortunately finances do not provide this construction.

Estimated investments – 120 mln. Euro

Reconstruction of the road Vyborg-Svetogorsk.

This road is a real bottleneck. Parameters of the road (radiuses of horizontal and vertical curves, width of the roadbed and cover, bridges and other elements of route) do not satisfy requirements of modern traffic. At present, the project of reconstruction of this road is finished. The financing is expected. This road is very important as an approach to the new cross-border terminal in Svetogorsk.

Investments volume – 22,4 mln. Euro, incl. 9,7 till 2010, 12,7 till 2025.

Construction of the road by-pass of the City of Svetogorsk.

The by-pass of Svetogorsk must be constructed in the same time with the reconstruction of the road Vyborg-Svetogorsk, if not earlier, as its absence will bring to naught all investments for reconstruction of the

road. Today, transit tracks, cars, buses are following through the cities territory and sometimes the line of transport means to the cross-border terminal paralyses the cities traffic. Besides, the transit traffic increases the air pollution. Unfortunately, the Municipal Formation has no funds to build the by-pass.

Investments volume – 4,8 mln. Euro till 2025.

Approaches to new port zones on the Karelian Isthmus.

A specialised project institutes (organisations) have worked up the proposals of motorway approaches to the port zones:

- E-18 - port in the area of Primorsk (reconstruction of some motorways of low categories joining them into one road with parameter appropriate to a traffic).
- Primorskoe chausse (motorway St. Petersburg - Primorsk - Vyborg) - Vysotsk

Investments volume – 22,8 mln. Euro, incl. 14,4 till 2010, 8,4 till 2025.

Reconstruction of the road St. Petersburg - Sortavala

This road has meandering route with small horizontal radiuses. It must be reconstructed as highway of II category. It was recommended to apply to the Ministry of Transport to include this important direction to federal road system.

Investments volume – 89 mln. Euro, incl. 31 till 2010, 58 till 2025.

MOTORWAYS NETWORK OF THE WESTERN AND SOUTHERN PARTS OF THE REGION

A motorway system in the West and South parts of the Region is connected with the 9-th intermodal transport corridor formation, providing approaches to the harbour zones in the Luga Bay and in the Batareinaya Bay and improving approaches to the cross border point Ivangorod at the Russian-Estonian border.

Upgrading the motorway "Russia" M-10, E-105

It is the most important direction within the whole North-western area of RF and the main south direction of the Crete's transport corridor № 9 as it connects St. Petersburg and Moscow. The volume of traffic is large, some sections are overloaded, and therefore the situation on the route becomes unsafe. It is necessary to reconstruct this route in accordance to I category requirements with finishing the construction of by-pass of the town Tosno.

Investments volume – 98,3 mln. Euro, incl. 47,8 till 2010, 50,5 till 2025.

Reconstruction of the highway St. Petersburg – Pskov with a by-pass of the city of Gatchina.

This route is the southern part of the intermodal transport corridor № 9 and one of the most important directions of transportation system of Leningrad region, therefore it is necessary to renovate this route in accordance with motorway standards.

Investments volume – 158 mln. Euro, incl. 58 mln. Euro till 2010, 100 mln. Euro till 2025.

By-pass of the City of Luga.

The route of the highway St. Petersburg - Pskov passes through the city territory and makes the life of the population worse (noise, air pollution). At present, the by-pass is under construction but chosen option was not the best: the motorway route is close to an urban area and the bypass might turn into a town goods motorway.

Investments volume – 78 mln. Euro till 2010.

Approaches to new port zones on the coast of the Luga Bay.

The reconstruction of local motorway networks for providing of approaches to the ports being constructing in the Luga bay Veimarn – Kotly - Koskolovo and a new road construction in the harbour zone Koskolovo-Vistino.

Investments volume – 21 mln. Euro, incl. 10 mln. Euro till 2010, 11 mln. Euro till 2025.

By-pass of the city of Kingisepp

Investments volume 6,6 mln. Euro till 2010.

MOTORWAY NETWORK IN THE EASTERN PART OF THE REGION

Reconstruction of the federal route “Kola” St. Petersburg-Murmansk M18, E105

Reconstruction includes upgrading the road to up to I category and constructing of new bridges

Investments volume – 161 mln. Euro till 2010.

Connection between Murmansk (M-18, E-105) and Vologda directions

According to decision of Ministry of Transport, the section Kisel'niya-Khvalovo is under construction now. A bridge over the Volkhov River has constructed. This construction will make a way from St. Petersburg to eastern areas of RF shorter.

Investments volume – 18,5 mln. Euro till 2010.

Construction of the new exit to Karelia: Lodeinoe Pole-Tokari-Pai-Petrozavodsk (alongside the railway St. Petersburg-Petrozavodsk) with a new bridge over Svir' river.

Investments volume – 63,2 mln. Euro in 2011-2025.

Reconstruction of the road Lodeinoe Pole-Podporozhje-Vytegra

Investments volume – 21 mln. Euro till 2010.

Reconstruction of the road Lodeinoe Pole-Tikhvin-Budogosch

Investments volume – 39,6 mln. Euro, incl. 9,6 mln. Euro till 2010, 30 mln. Euro till 2025.

CONCEPTUAL NEW DIRECTIONS

A new route St. Petersburg-Tallinn.

Today, E-20 on the section St. Petersburg-Ivangorod passes through the territories of settlements on its way. The analysis of reconstruction proposals performed in the project "A scheme of the functional zones of the Finnish Gulf coast territories", showed that construction of a new route is cheaper. The new road planned from the bypass along a coast up to the Estonian border. The new road's creation supposed to demand construction of a new bridge over the Narva River, further down the river than the existing bridge in Ivangorod. This proposal may be realised in long-term period. The Road Committee of the Leningrad Region proposes to construct this road closer to the Finnish Gulf coast.

A new connection with Estonia.

In the Committee of Architecture and Town-planning, the opportunity of creation of a new connection with Estonia through the City of Slantzy is discussed. The bridge over Narva River is to be constructed for realisation of this connection.

Connection between Pskov and Tallinn directions.

The realisation of this proposal aims an organisation of a new approach to seaport zone in the Luga Bay from the south and south-eastern direction. This measure will make a good influence on the life of people living along Luga River and on the development of the recreation in this area that will allow increasing of working vacancies

The new route St. Petersburg-Jaroslavl'.

It is a proposal of the "General (Master) Plan of Leningrad and Leningrad Region" (1985). A new federal route on the territory of Leningrad Region along the railway Mga-Sonkovo-Jaroslavl' supposed to be constructed. This direction has no automobile connection at present.

New connection Vyborg - Karelia.

Vyborg - Kamennogorsk-Borodinskoe-Sortavala (reconstruction of the section Vyborg - Kamennogorsk-Borodinskoe, new construction Borodinskoe-Sortavala)

Formation of a new international corridor in the Northwest of the Russian Federation - the Gulf of Bothnia - Finland - Karelia - Leningrad Region - Archangels Region - Komi Republic - Pred Ural.

Within the Leningrad Region, the route of the new international corridor is supposed to consist of the roads "St. Petersburg - Sortavala" - "St. Petersburg by-pass" - "Kola" - "Lodeynoe Pole - Podporozhie - Voznesenye - Vytegra". The corridor will enable economic connections from inland of Sweden and Finland through a territory of border regions to Northern parts of the Northwest Russia and Pred Ural.

There is no information of investments for realisation of new conceptual projects.

ROAD INVESTMENTS

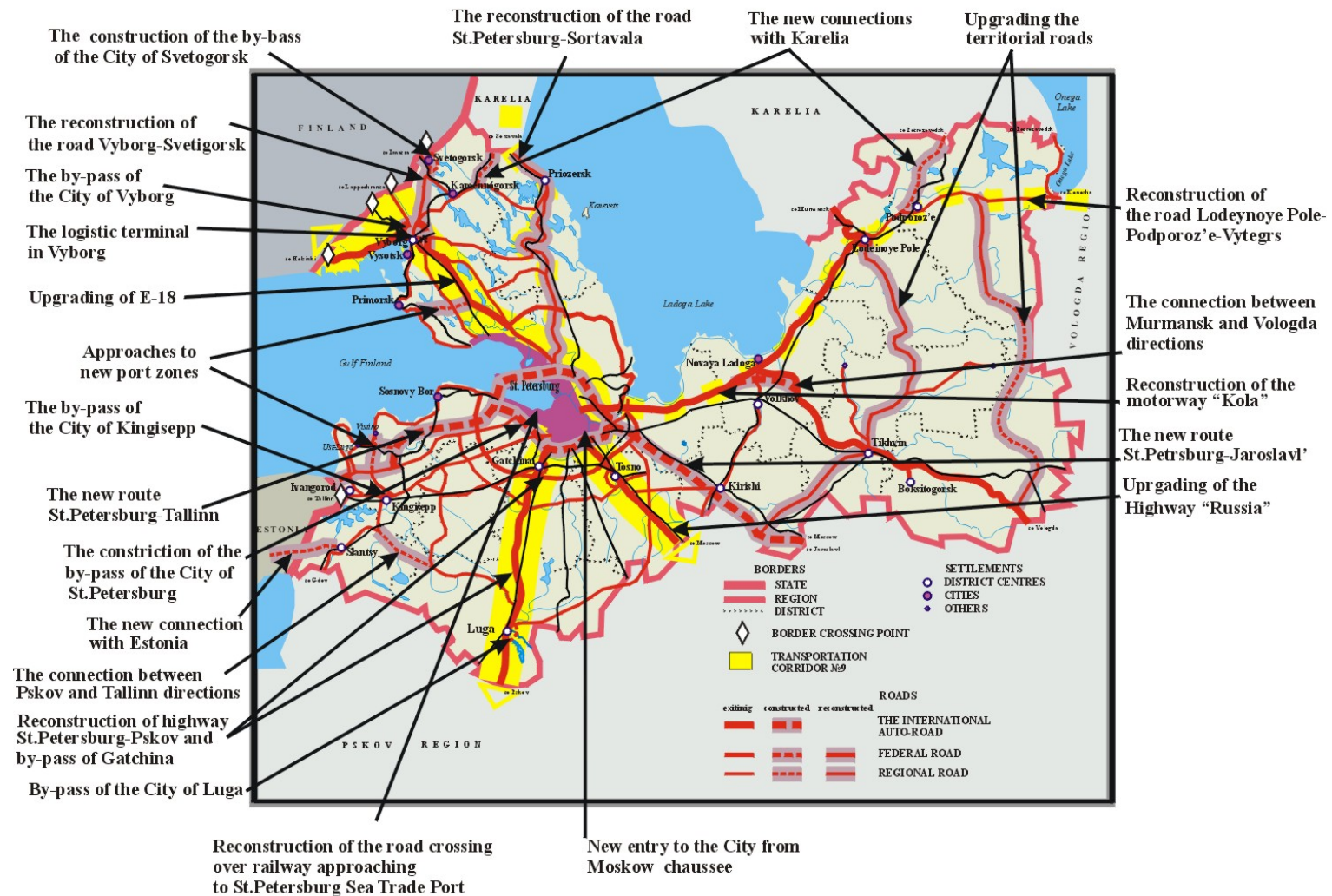


Figure 3 Motoway network of Leningrad Region
 Source "The Concept of Social Economic and Town Planning Development of the Leningrad Region
 RosNIPI of Urbanistica, 1998

AIR TRANSPORT



Figure 4. Airports of St. Petersburg and Leningrad Region

Source "The Concept of Social Economic and Town-Planning Development of the Leningrad Region" RosNIPI of Urbanistica (1998)

SAINT-PETERSBURG

Airport "Pulkovo".

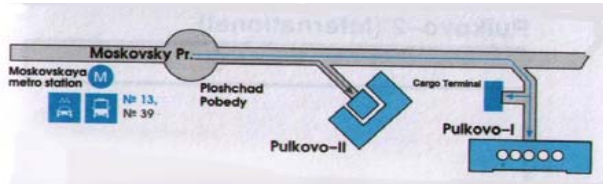


Figure 5. Pulkovo Destinations

Source: Timetable of "Pulkovo airlines", SPb, 2002

St. Petersburg airport "Pulkovo" has the shortest distance from the city among all European airports of cities with no less than 1 mln. habitants. It consists of two terminals: "Pulkovo - 1" - for domestic and CIS lines; and "Pulkovo-2" - for the rest of the world international lines.

In 1993 the group of experts " Airconsult AG" (Frankfurt on Mine) together with "Lenairoproject" Institute (Saint-Petersburg) and "Pennel Kerr Forster GmbH" firm (Munich) had created "Airport "Pulkovo" general development plan till 2010 year".

As one of results of this work was a conclusion, that airport airfield has a classic arrangement of runways with ability to work in combined regime as well as in separate one. and its carrying capacity can supply nearly 50 mln. passengers transportation per year, that cover the nearest 40 year region needs in air conveyances. In order to reach such transportation volumes in the general plan for the nearest 15-20 years had been foreseen step-by-step construction of passenger and cargo terminals, which would be created by investments, including capitals of different international accompanies. Simultaneously the infrastructure of airport would be developed and there would be constructed hotels, parking, and drive motorways. For this moment, the realisation of this plan has begun already. The reconstruction of airport "Pulkovo-1" is carrying out in order to fit it for servicing CIS countries international routes. Construction of refining devices and reconstruction of boiler-building are close to the end. The following constructing investment projects were started:

- international terminal "Pulkovo -3";
- cargo complex for international and domestic air conveyances;
- hotel with business-centre.

International terminal "Pulkovo-3".

The average growth of Saint-Petersburg airport "Pulkovo" international lines passenger flow in the recent 4 years was equal 10-12% per year. That's why it is planning to begin the construction of new international passenger terminal "Pulkovo-3" with 2000 persons per hour capacity.

It is predicted, that "Pulkovo-3" would be able to supply services for 3 mln. international airlines passengers every year. For these purposes, three level terminal of up to day architecture will be constructed near the existing terminal "Pulkovo-2". All leading air companies will be presented

with their own offices and desks for client services. Arrival and departure passenger flows will be parted on different levels. Custom, immigration, quarantine services and other state authorities would possess comfortable premises and working places.

The terminal will have nine telescopic ladders for boarding (disboarding) of passengers. Two of them - for broad fuselage liners, like "Boeing - 747" .

Construction and exploitation of terminal would be carried out by several Russian, foreign and joint companies in tune with business-plan registered by Federal Aviation Service of Russian Federation in accordance with international standards for civil aviation.

Financial support of the project would be arranged with the help of joint credits given by European reconstruction and development Bank and other foreign investors. It is planned to cover attracted credits by exploitation revenue. Means and warranties of federal budget are not foreseen.

Investment volume – 174 mln. Euro

Hotel with business-centre.

For the sake of better comfort for tourists and businessmen arriving to Saint-Petersburg, a hotel with 4-stars level of services and business-centre in accordance with international rules TNS is planned to be constructed in the neighbourhood of "Pulkovo-2" and "Pulkovo-3" terminals. The hotel with useful space of 30.000 sq. m. and 450 rooms will have restaurants, cafes and bars with 600 places, indoor pool with total area of 700 sq. m., garage for 120 motor-cars.

The business-centre nearby to hotel with total area of 7.000 sq. m. will have 3 conference halls, exhibition premises, offices with all necessary contemporary equipment and satellite communications. Financial support of the project would be arranged by credits given by European banks.

Estimated investment volume – 140 mln. Euro

Cargo terminal.

Airport "Pulkovo" is an ideal place for boundary of air, land and sea cargo transportation. But its perspective development is limited by the fact, that cargo complex is situated now behind the territory of the airport.

The airport Administration has come to decision to construct a new cargo terminal according to a general plan of the airport's development. The first turn will have an area of 6,000-7.000 sq. m. and year load turnover of 35.000 tons. When the first turn of cargo terminal will reach planned power, it is foreseen to begin construction of the second turn of cargo terminal in order to increase load turnover to 100.000 tons per year.

From the city side there would be a platform for service of heavy lorries and trucks. Such technological scheme of cargo operations will permit to load planes directly "from wheels" and to reduce significantly time of operation and storage time. Near the building secure parking for lorries and motorcars would be arranged.

After introduction in exploitation of this new cargo terminal the "Pulkovo" airport would be convenient transit centre similar to centres, that exist in Moscow, Helsinki, Frankfurt.

Estimated investment volume – 12 mln. Euro

LENINGRAD REGION

Airport "Rzevka"



The airport " Rzevka" has no possibilities for the progressing as it is situated between residential areas of St. Petersburg and Vsevolozk. The air operations make noise influence on the residential areas and in future this airport may

be used by small aircrafts on domestic and tourist (sport) lines or as educational flying base. The roads leading to airport from St. Petersburg and railway platform Kovalevo need to be adapted for the modern standards too.

Needed investments for reconstruction of the existing airport – 9,3 mln. Euro till 2010. Estimated investments for further development of the airport – 35 mln. Euro.

Domestic airports.

Having been in operation till 1980-ies, a system of interregional airlines did not pass a competition with stormy progressed of bus transport at that time. A low price of a trip was preferred to a short time of the trip.

As operation of buses is getting worse and a time of a trip to airport "Pulkovo" is increasing, restoration of the interregional air lines is discussed at present.

Existing domestic small airports in the region - Lodeynoe Pole, Tikhvin, Slantzy - need a fundamental repair and up-grade. The roads to these airports must be repaired too.

Investments for domestic airlines development are not foreseen.

PIPELINES

Oil and oil-product pipelines.

There is only one main oil pipe line in the region's territory. This main oil pipeline approaches from Yaroslavl' to the refined factory "Kirishinefteorgsyntes". Extent of it is ~ 100 km in borders of Leningrad Region. Diameter of a pipe is 1200 mm. Kirishi oil refined factory "Kirishinefteorgsyntes" is the largest one not only in territory of Leningrad Region but in the territory of Northwest region of Russian Federation. The oil product pipeline departs from "Kirishinefteorgsyntes" to Saint Petersburg. Extent of it is 114 km, diameter is 325 mm.

The perspectives of development of the trunk pipelines are connected to construction of the bulk-oil ports and The Baltic Pipeline System on territory of the region.

The Baltic Pipeline System is being established in compliance with the President's Decree of 1997, entitled 'Providing cargo transit via the coastal areas of the Gulf of Finland' and the Russian Federation Government Decree of 1997, entitled "Design, construction, and operation of the Baltic Pipeline System".

The Baltic Pipeline System is one of the most promising projects in the modern Russian economy. It was designed for a new direction of oil exports from the Timan-Pechora region, West Siberia, and the Urals-Volga region, as well as oil transits from the CIS states, mainly Kazakhstan. The project implies building a new Russian crude oil transshipment terminal near the City of Primorsk. The system complies fully with the national economic and political interests, as currently, the port in Novorossiisk is Russia's only deepwater port. The project will be implemented in several stages.

The general scheme of oil carrier port in Primorsk region envisages achievement of 39 million tons of traffic to 2010.

The first stage of the BPS with an export capacity of 12 mln tones per year became operational in December 2001 when the first tanker was loaded at Primorsk. The cost of the first stage of the BPS has been estimated at \$460 million. Diameter of pipe is 720 mm. The system was established on the base of the existing Transneft's main pipeline system, new loopings at the existing Yaroslavl'-Kirishi pipeline, and a new pipeline from Kirishi to Primorsk with an oil terminal in the Gulf of Finland. Extent of new pipeline 270 km.

The Transport Ministry has signed a protocol of function distribution in the oil terminal construction in Primorsk. In the future, the pipeline capacity may be increased if additional oil volumes exceed 12 million tons per year.

From the July of 2003 18 million tones of crude oil was overload through the terminal, from the March of 2004 - 42 million tones.

The second stage is practically finished now. The objective of the second stage is to expand the Primorsk terminal loading capacity to approximately 62 million tons/year of crude oil. The second stretch of oil pipeline route is the 2,700 km-long. Besides that the oil-product pipeline (diameter 1020 mm) is under construction for overloading 24 million tons/year of oil-products. The second stage of the BPS, is estimated to cost around \$350 million to \$400 million. It must be completed in 2005.

Oil transportation via the Baltic Pipeline System will enable Russia to stop using the expensive services of the transit countries. The transportation costs in the Baltic Pipeline System will be US\$3 - US\$4 per ton lower that the costs at the routes going via transit states.

Environment protection is paid special attention.

Considering that implementation of port construction plans influences the environment changes in the Finnish Gulf, which, according to the International Marine Agency, is the "Priority Protection Area", steps are taken during design and construction of new transshipment facilities to reduce the environmental impact to a possible minimum and meet

environment safety requirements both during construction and during further operation of the BPS ports and other facilities. The fact that the BPS project touches upon interests of both Russia and a number of European countries located in the region of the Baltic and Northern seas determines the necessity to account for the environmental norms and standards of all states concerned, despite their considerable differences and the problem of choosing the appropriate standards.

At the same time, the priority was given to Russian standards

According to Pipeline Engineering GmbH (Germany) recommendations, underwater passages across the main rivers that the oil pipeline route traverses will be made in the protective mantle (pipe-in-pipe) by patch boring, which allow to rule out the possibility of oil leakage in watercourse if accident occurs as well as avoid adverse impact on the bottom and riverbed during the oil pipeline construction. In addition, reinforced extra wide steel pipes, with manufacturer's isolation, were used along the 130 km section of the pipeline crossing the water intake riverbed of the Neva and the Ladoga Lake.

A tunnel was constructed below the river bottom, at least 7 meters deep, at the Neva underwater passage, to accommodate a working pipeline, of 720 mm in diameter, in a protective mantle as firm as the main pipeline. This decision and the planned width of the working pipeline - twice as wide as the estimated width - rules out almost absolutely any oil leakage to the Neva in case of accident at the underwater passage, and in case of normal operation such leakage is ruled out completely.

Moreover, measures to localise and manage emergency oil leakage, if any, before the pollution reaches the St. Petersburg water intake area, were worked out.

To diminish damaged of soil and plants, reclamation of affected lands and forests is envisaged. Air-stops are provided for along the entire pipeline route, electric linear gates equipped with telemechanics and automatics systems are installed in every 20 km.

The adopted technical decisions are based on contemporary scientific and technical achievements and ensure compliance with norms and requirements of international conventions on environment protection

during transshipment facility operation, including the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area (HELCOM) signed by the Russian Federation in 1992.

Marine accidents of tankers in the Finnish Gulf due to possible stranding when approaching the Bjorksund Strait and roadsteads in the Finnish Gulf represent a possible danger for sea waters and coastal territories of Russia and Finland.

Considering that the eastern part of the Finnish Gulf is a difficult for reclamation region, having low depths, numerous gullies, banks and islands and being distinguished by storms and frequent low visibility periods, particular attention is paid to assure navigation safety, reduce the risk of ship accidents and prevent their consequences.

The regional system of the Finnish Gulf safety management has been developed and is implemented. Nowadays, the station of observation is operating in the port Primorsk.

To rule out emergency situations when tankers with dead-weight of 50,000 - 120,000 tons sail either with or without load, the new seaway project was developed where ships of all types and destinations pass according to individual plan, with navigation signs in mid-channel axis. When a tanker approaches the entry to, or the exit from, the Primorsk port, all other ships won't move there, which will allow to assess the theoretical number of emergencies with double-bottom and double-frame tankers with probability (frequency) of $3 \cdot 10^{-6}$ accidents a year or practically improbable refusal.

It is also planned to take a package of measures to diminish adverse environmental impact of loading in new ports. This issue has been dealt with in the most detailed way for an oil refilling terminal in Primorsk region.

To prevent such emergencies, special protection measures are provided for: driftage safety system, alarm, fast-acting capsule and safety valve, which minimise possible oil spills. To manage such oil spills in the Primorsk port, the project envisages creation of the emergency oil spill management base (OSM base).

In order to implement the ecological monitoring at the phase of exploitation, modern ecological control laboratories have been bought and are currently assembled at industrial objects of Primorsk and Kirishi terminals.

Thus, the principal features of the Baltic Pipeline System are its geopolitical value, benefits for the national safety, economical feasibility, environmental safety, and technical feasibility.

The 3-d line will be constructed till 2005. Approximate Investments for construction Of 3-d line – 1139,5 mln. Euro.

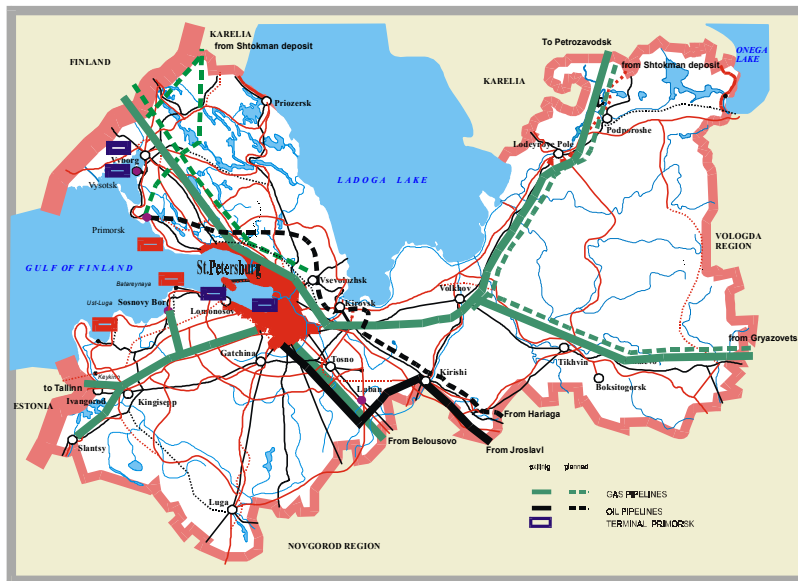


Figure 6. Pipelines of Leningrad Region

Gas pipelines

Gas supply of consumers of Leningrad Region is carried out by the natural and liquefied gas.

Natural gas of the Tyumen deposits is coming to Leningrad region by the system of branches of the main gas pipelines:

- 2 threads (diameter 1020 and 1220 mm) from Gryazovets direction;
- 2 threads (diameter 1220 and 720 mm) from the Belousovo-Serpukhov direction;

The further distribution of natural gas is carried out on intraregional pipelines;

- Volkhov - Kirishi (diameter 720 mm);
- Volkhov - Karelia (diameter 720 mm);
- Kohtla-Yarve-Petsburg. This gas pipeline is constructed during 1948-1973 and is obsolete physically and morally, especially on the Kingisepp-Slantzy section (diameter 2x 529 mm).

There is a main gas pipeline from Saint Petersburg to Finland - two threads in diameter of 820 mm and 1020 mm. Total extent of above mentioned gas pipelines is ~ 1100 km within the borders of Leningrad Region.

The progressing of gas pipelines is connected with development Shtockman deposit in the Barents Sea first of all, the construction of the 3-d thread from Gryazovets direction and Northern European gas pipeline in the territory of Leningrad Region.

The North – European gas pipeline (NEG) creates principally new route for Russian gas exports to Europe. Project implementation will allow diversifying gas export flows, to directly connect gas network of Russia with the countries of the Baltic region and with the European gas grid. NEG is featured with avoidance of transit states along its route. It decreases sovereign risks and costs of gas transmission, and at the same time prove to enhance reliability of gas export supplies.

The gas pipeline will run under the waters of the Baltic Sea from Vyborg to the coast of Germany (in the vicinity to the town of Greiswald). Construction of marine gas pipeline sections to deliver gas to consumers in Finland, Sweden, the Great Britain and other countries is planned in the project.

PORTS

The Federal aim programme " Transport-technological supply of goods transit through the shore territories of Finnish Gulf, Russian transportation system modernisation" for 2002-2010 years, and its constituent parts "Internal water ways" and "Internal water transport" carry out overtaking transport development directed on satisfaction of state economics needs in conveyances of foreign trade and internal goods by the export-import sea and river goods.

As it is following from mentioned above measures of progressing and improving of the transport infrastructure the main part of them is directed on the strength of the railway and motorway approaches to the port's zones.

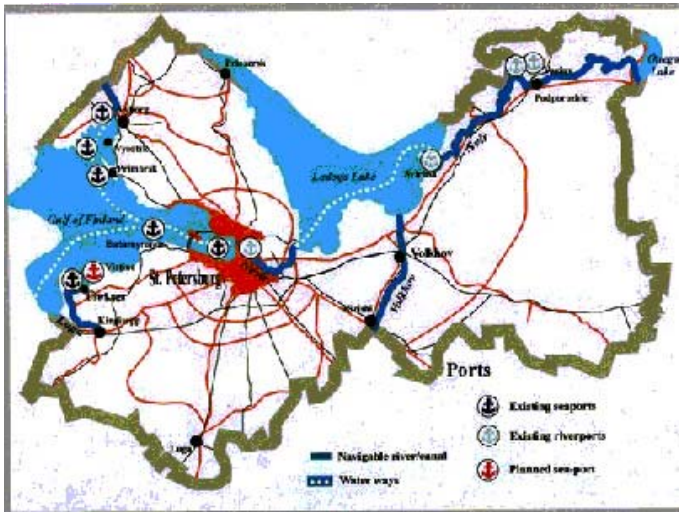


Figure.7. Ports of St. Petersburg and Leningrad Region

Source "The Concept of Social Economic and Town-Planning Development of the Leningrad Region " RosNIPI of Urbanistica (1998)

SEA PORTS

SAINT-PETERSBURG

Big port of the City of Saint-Petersburg.

Being the largest of the North-Western region of Russia, Big Port of St. Petersburg, as a marine industry-harbour zone, includes:

- trade seaport of St. Petersburg;
- port of Lomonosov (Navy Base berths);
- "Bronka" port (new port of Lomonosov);
- "Litke Base" complex in the port of Kronshtadt;
- Gorskaya port ("Gorskie Prichaly");
- passenger terminals;
- 27 miles long marine approaching channel;
- shipyards (building and repair companies);
- railway branch lines and pre-port stations (Avtovo, Narvskaya, New Port).

Its whole area occupies nearly 400 sq. km. of the Neva River Gulf ("Nevskaya Guba") shore.

The Big Port of Saint-Petersburg is the freezing one. The ice navigation usually starts with the first ice in the Nevskaya Guba in December and comes to an end in April. All the ice operations management is carried out by the ice operations staff under the captain of port.

Approximate investments volume for progressing of Big Port of the City of Saint-Petersburg is estimated 175 mln. Euro (construction port in Lomonosov, "Litke Base" complex in the port of Kronshtadt, container terminal in Trade seaport of St. Petersburg)

Trade Seaport of Saint-Petersburg.

Characteristics:

- specialisation in foreign trade: Export: nitric, potash and phosphoric fertilisers; timber; containers; metals (ferrous and non-ferrous); oil products. Import: food-stuffs; containers; perishable goods.
- territorial extension is hardly limited as port located within the city border;
- the infrastructure is satisfied (Only few existing free areas have poor developed infrastructure and low level of comfortability);
- the harbour and sea channel 27 miles long allow to moor vessels with DWT no more than 40 000
- accommodating vessels drawing 9,8 meters at the majority of berths, there also ones capable to handle ships with a draft up to 11 meters and length 260 meters.
- the main problem is low capacity of railway approaches.

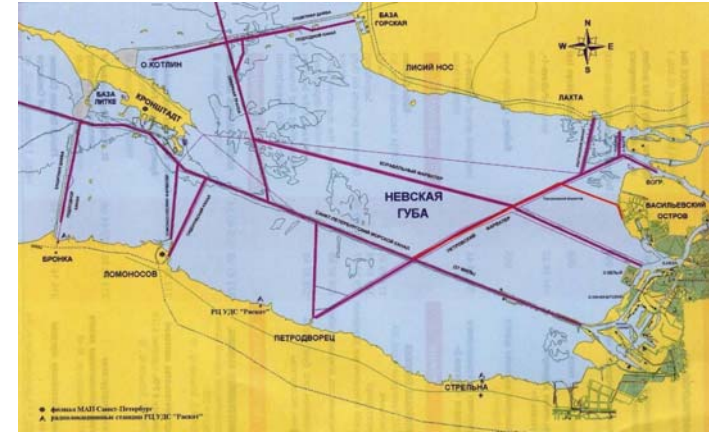


Figure8. Big port of the City of Saint-Petersburg

Turnover in thousand tons, 2000 (reported)

Total	32080
A Dry cargoes , including.	24690
Fertilisers	4270
Grain	90
Timber	2680
General cargoes	14090
B. Wet bulk cargoes, including.	7390
Oil products	7390

Total turnover in 2001 – 36900 ths. tons, in 2002 – 41700 ths. tons.

Port of Lomonosov.

It is located at the Southern coast of the Gulf of Finland 35 km far from St. Petersburg.

Characteristics:

- main specialisation - timber.
- the territory is hardly constraint;
- transport supply is not satisfied.

Predicted volumes of goods in 2003 - 450 ths. tons.

"Bronka" port (New Port of Lomonosov).

Characteristics:

- specialisation - container's goods;
- depth at the berth - 5,3 m

Plan turnover on 2010 - 1650-2200 thousand. tons

"Litke Base" Complex in the port of Kronshadt.

This harbour is located at the Kotlin Island

Characteristics:

- specialisation - working over container's goods and working up Ro-Ro cargoes;
- territory is free for development;
- creation of the port is possible after construction of the Storm Surge Barrier in the Gulf of Finland will be finished.

Expected turnover - 100 thousand tons.

Gorskay port ("Gorskie Prichaly")

The existing coastal and berth construction are located on the northern bank of the Gulf of Finland.

Characteristics:

- specialisation - timber, scrap metal
- depth at the moorage 4,5 m
- has the railway branch and pre-port station "Gorskaya"

Expected turnover in 2003 - 320-540 thousand tons

Passenger Terminals.

One of the city significant tourist business activities is the cruise navigation in St. Petersburg Sea Port. 233 vessels with 148,0 thousand people on board have visited the port in 2000. Three passenger moorages with total length - 432 m on the Angliiskaya embankment and two passenger moorages with the total length - 360 m on the Lieutenant Schmidt embankment had been created in a recent five years. Two moorages in St. Petersburg Trade Sea Port (which are used for accommodation of large passenger vessels - more than 200 m length) were installed. However, the limited possibilities of the closed channel's part don't allow to ensure the posting of cruise passenger vessels with the length more than 200 m to the moorages of the Marine station and embankments of the Neva River. These purposes need the creation of a new approaching channel for passengers vessels and the Petrovsky fairway deepening up to the moorages of the Marine station and the Neva River with depth up to 9,0 m.

LENINGRAD REGION

Vyborg

The marine trade port of Vyborg is located in the Vyborg bay of Finnish Gulf.

Characteristics:

- main specialisation – processing export (96%) cargo (coal, rolled iron); from 2001 - fertilisers;
- navigation - all the year; from December till April by means of ice-breakers, pilot passing without fail;
- depth at the cargo moorage 7,0 - 8,0 m;]
- accommodating vessels drawing no more 6,5 m and length till 135 m
- has the railway approach from the sort-station Vyborg and road branch from the route E-18;
- has the passenger pier for suburb lines (passenger connections to the neighbour islands) and tourist line Lappeenranta - Vyborg
- has the yacht harbour.

The main problems:

- insufficient depth of sea-passing channel;
- there is no reserve for further territorial extension as port of the City of Vyborg is located within the city border

Turnover in 1000 tons

	1999	2000	2001	2002
Total	773	944	916	1294
Including dry cargo	764	940	900	1268

Passengers, person during navigation:

Vessels	1998	1999	2000
Passenger	76182	82769	84161
Cruise	12351	14684	12491
Tourist	2416	2489	2292
Total	90949	99942	98944

Investments volume for replacement the out-of-date equipment and making deeper the approaching channel – 23 mln. Euro till 2010 year.

Vysotsk

Port is located on the Vysotsk Island in the Vyborg Bay of Finnish Gulf.

Characteristics:

- specialisation – processing of the coal (99 %);
- navigation - all the year; from December till April by means of ice-breakers, pilot passing without fail;
- depth at the cargo moorage -9,5 m;
- accommodating vessels drawing no more 9,3 m and length till 200 m
- has the pre-port railway station Vysotsk and the road branch from the common motorway network.

Turnover in thousand tons

	1999	2000	2001	2002
Total	2054	2950	3188	3125
Including dry cargo	2043	2931	3188	3125

Investments volume for making deeper the approaching channel and moorage, new equipment, construction new moorage – 9 mln. Euro till 2010 year.

New terminal in the region of the City of Vysotsk

The construction of the new oil-product terminal from the south of existence port is discussed at the present time.

The port will use the existence railway station and the road branch. Supposed turnover - 10,7 mln. tons of oil-product in 2005, including first turn – 3 mln. Tons in 2004.

Investments volume – 350 mln. Euro

Primorsk

The port is the component of Baltic Pipeline System (BPS). Port areas are formed around Ermilovskaya Bay of Finnish Gulf. The operation of port started in the end of 2001.

Characteristics:

- main specialisation – over-loading the oil cargo
- pier is located in the sea ;
- accommodating tankers drawing till 17,0 m and maximum length till 307 m
- pipeline oil delivery (BPS);
- has oil-tanks;
- has railway approach from the Ermilovskaya railway station of common railway network;
- further progressing - construction of terminals for over-loading light and dark oil products.

Turnover:

2001– 189,5 thousand tones, 2002 – 12,0 million tons, from 07.2003 – 18,0 million tons, from 03.2004 – 42 million tons of crude oil.

Perspective turnover – 62, 0 million tons.

Investments for further development – 2320 mln. Euro

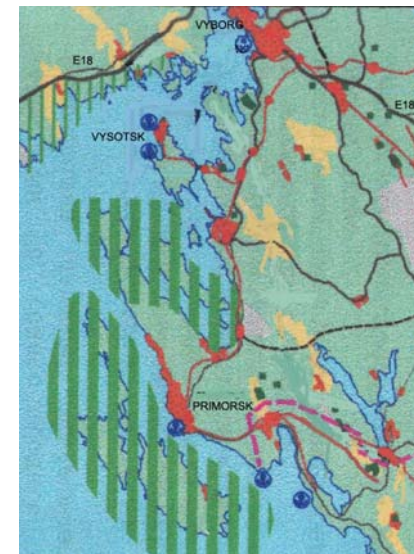


Figure 9. Ports of Karelian Isthmus
Source: Engineering Centre, 2002

Ust'Luga

The existing port area is situated in the mouth of Luga River, flowing into the Luga Bay.

Characteristics:

- specialisation – working up fishery ships and river-sea vessels (timber for export);
- ships drawing till 3,5-4,0 m
- depth at the moorage 2,0 - 6,0 m;
- has railway and motorway branches;
- the progressing is limited by existence of the protection places for spawning and small depth for moor big vessels into the mouth of Luga River. The progressing of moorage without changing the specialisation.

Turnover in thousand tons

	1999	2000	2001	2002
Total	262	342	194	201
Including export timber	262	318	190	196

New port area is forming on the eastern coast of the Luga Bay. The coastal zone has the depth accommodated for moor big vessels, but it is necessary to construct the infrastructure - railway branch, road approaches, engineer objects and network.

Characteristics:

- specialisation: many function operating port complex;
- navigation – all the year, with short period of ice-break pilotage
- great depth of aquatorium with short distance of sea approach channel
- depth of moor aquatorium 16 m;
- has the opportunity for development territorial

Turnover: 1000 thousand tons of coal in 2002

Prospect turnover - 35000 ton

Costs of port complex construction is estimated 2800 mln. Euro, including construction of container terminal in Vistino – 232 mln. Euro.

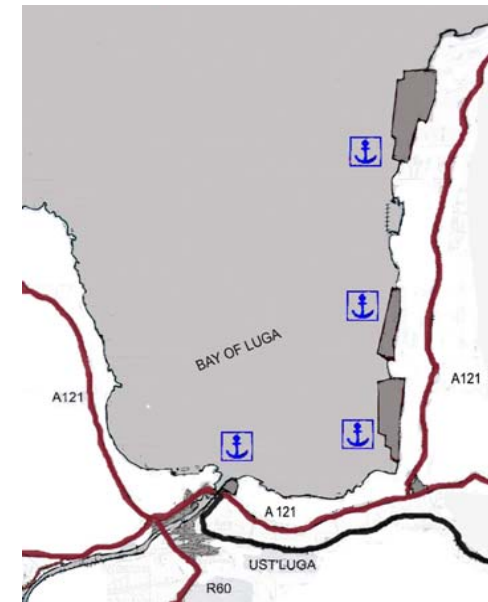


Figure 10. The development of port zones In the Luga Bay.
Source: Engineering Centre, 2002

The Baltic Ferry line

The project "Baltic Ferry" provides construction of the port infrastructure and organisation of the rail-ferry bridge "Ust'-Luga - Kaliningrad region (the City of Baltiysk, peninsular Vostochny) - Zassnits and other ports of Germany". It is a project with very good prospect, because the port Zassnits as well as other ports situated in the Land Meklenburg-Front Pomeranya has the same to Russia rail track width, so, leaving the ferry, carriages can start without delay, but, if necessary, it would be overloading on European standard track platforms at railway junction. Load turnover of ferry line 'Ust'-Luga-Kaliningrad region-German ports would be 1,4 mln. tons at the first stage and will reach 3,2 mln. tons the next 8 years. Arrangement of the ferry line just from Ust'-Luga has a good prospect due to short (only 3 km) port approach canal and its round the year unfreezing character.

Investments volume – 88,5 mln. Euro

Port in the Batareynaya Bay

In compliance with "The General Scheme of Development of Transportation-Technological Port Complexes in the Finnish Gulf" the oil-product port in the Batareynaya Bay is supposed to construct. Expected volume of over-loading of oil-product - 15 mln. tons. Oil products will delivery by oil-product pipeline from Kirishi oil plant. [1,2] Last time it is discussed to change this port for general cargo and containers.

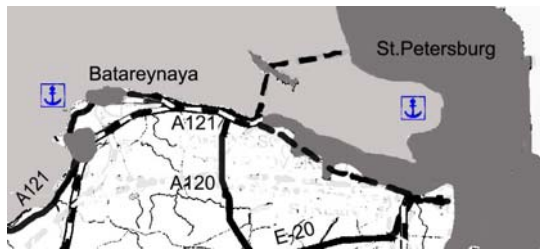


Figure 11. Port in the Batareynaya Bay

Source: "The General Scheme of Development of Transportation-Technological Port Complexes in the Finnish Gulf " (LenmorNIproject, 1997)

RIVER PORTS

Main direction of the inland water paths is the Neva River- the Ladoga Lake – the Svir' River (it makes a part of the Volgo-Baltic water path). The Saimaa channel in north-eastern part of the region also belongs to the main directions.

By the Volgo-Baltic water paths the main cargo flows are passing from central and north-eastern regions of Russia and back. In their structure are the transit goods of interstate and federal cargo exchange, goods from and for St. Petersburg, goods of inter-regional and inter-district cargo exchange.

The main share of total cargo flow on the Volga-Baltic water path (40-60 %) belongs to the transit export-import cargo. In their structure: oil, timber, coal, metal from central and north-eastern regions of Russia for export, for import: equipment from European countries to Russia. These carriages are implemented by river vessels, a significant place among which is taken by special "river – sea" vessels.

SAINT PETERSBURG

JSC " Saint-Petersburg River Port".

It includes two branches: cargo region "Nevsky" (right bank of the Neva river and cargo region "Vasileostrovsky" (mouth of the Small Neva river).

Characteristics:

- the period of navigation is 200 days in a year;
- cargo region "Nevsky" has connection with railway "Dacha Dolgorukova" station;
- the region processes all types of goods
- .for loading works cargo regions have moorages of the total length more than 800 meters, with well mechanisation,
- cargo region "Nevsky" serves "river-sea" vessels during navigation, all round the year processing of railway and automobile goods, accumulation and storage of goods between navigation periods for conveyance during navigation.
- -cargo region "Vasileostrovsky" is able to lead all round the year processing of goods and shipping of containers.

Turnover:

	1998	2002
Total in two directions	4366	6148
Including tankers	1935	2572
passenger	26	

On the estimation of Transport Ministry this volumes will increase in 1,5 up to 2010 in compliance with development of transport corridor “North-South”

Investments volume for development of the river port are 650 mln. Euro till 2010 year.

“.JSC " Passenger Port” (left bank of the Neva River, Nevsky region)

Characteristics:

- navigation - 150 days
- specialisation tourists routes;
- moorages for reception and service of tourist vessels;
- there is hotel "Rechnaya" with 430 rooms in the port zone with restaurant and banquet halls with 200 sits, yet it is not enough ;
- repair facilities carry out all types of repair works, winter and navigation camping and docking of vessels;
- here is urgent need of driving ways and parking for tourist buses;
- the territory for development is hard limited because of restriction by urban buildings.

In 2002 passenger conveyances is 140-150 thousand persons.

The main “bottleneck”

The main “bottleneck”, drawing up the further development of navigation through Volga-Baltic water way is the waiting for bridge opening to pass to seaport and exit to Finnish Gulf. At the main ship routes inside the city there are 8 not high from water level bridges with opening spans at the Big Neva river, part of them opens once in a day during 2 hours and 15

minutes all in all. The bridges had become hindrance to increase load turnover of international transport corridors.

In 2001 there were 98 days of 200 days long navigation (nearly 50%), when the whole number of orders for passage had not been satisfied and several vessels were waiting next night.

When would be finished the construction of bridge passages for by-pass of the City of Saint-Petersburg, not hindered the navigation, it is useful to introduce the schedule of day time opening the bridges for 15-20 minutes, in accordance with experience of European cities.

LENINGRAD REGION

“Leningrad River port Ltd”

Leningrad River port is situated in the town of Otradnoje on the Neva River and a mouth of Tosno River

Characteristics:

- specialisation- over-loading of building materials and sand;
- passenger transportation is insignificant but has increased after a period of stagnation (1995-98).

Turnover: in 2001– 4,8 mln. tons of sand [1,2]

Podporozky river port

The port is located on Svir’ River to the North of Leningrad region. There are two port areas: Vaziny (in 15 km down the r. Svir’) and Sviritsa in the mouth of r. Svir’ , falling into Ladoga Lake.

Characteristics:

- specialisation: timber and mineral-building materials, scrap and overloading to railway and auto transport and back

Turnover: 2000– 730 Th. tons, 2001 – 850 ths. tons.

The port is unloaded and the main task is to attract new transships.

In this connection, investments in river ports development are not foreseen.

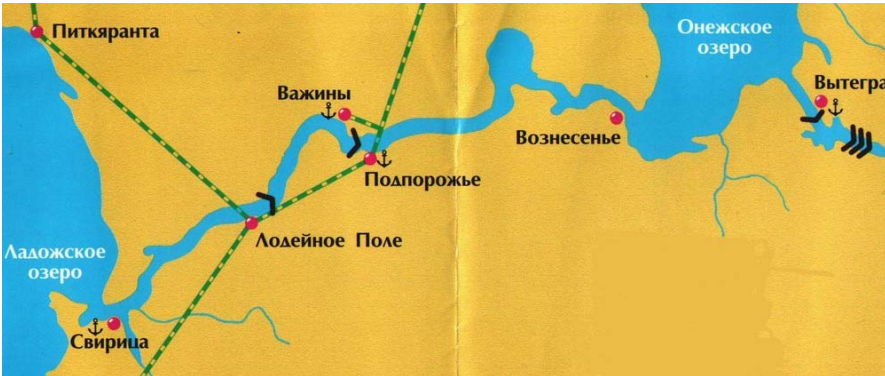


Figure 12. Port area of port Podporozhie



Figure 13. Volga-Baltic water way

Appendix to part 2.

APPROXIMATE INVESTMENT INDEX

Object name	Estimated cost of construction, mln. Euro		
	Total	For periods	
		till 2010	2016-2025
1	2	3	4
RAILWAYS			
By-pass of the City of St. Petersburg	500,0		500,0
Reconstruction of railways to the port of St. Petersburg	180,0	180,0	
Construction and reconstruction of railways and stations, providing approaches to port zones in Luga Bay	763,0	274,0	489,0
Additional railway capacity of the line Mga-Budogosch-Sonkovo-Moscow	26,0	26,0	
Reconstruction of the line Ushkovo-Primorsk-Vyborg with construction of the station Vysotsk II	228,0	90,0	138,0
Reconstruction and construction of railway stations in developed port zones of Karelian isthmus (Ermilovskaya, Sea port Primorsk, Vysotsk I, Portovaya).	210,0	125,0	85,0
Reconstruction of the line Ushkovo-Vyborg-Buslovskaya	185,0	185,0	
Reconstruction and construction of the line Vyborg-Zitkovo-Sosnovo	225,0	80,0	145,0
Construction of a second track and electrification of the line Vyborg-Kamennogorsk-Hiitola and by-pass of Hiitola connecting to the line St. Petersburg-Prizorsk-Sortavala	208,0	98,0	110,0
Construction of a second track on the section Sosnovo-Hiitola	171,0	71,0	100,0
TOTAL FOR RAILWAYS	2696,0	1129,0	1567,0

	1	2	3	4
AUTOMOBILE ROADS				
Construction of St. Petersburg by-pass.* /		150,0	150,0*	
Reconstruction of the road crossing over a railway approaching St. Petersburg sea trade port		18,8	18,8*	
Construction of the new entry to the city from Moskovskoe chaussee		36,5	36,5*	
Upgrading of the road E18 "Scandinavia"		77,5	38,7	38,8
Vyborg by-pass (finishing)		11,5	11,5*	
The logistics terminal in Vyborg		120,0	120,0	
Reconstruction of the road Vyborg-Svetogorsk		22,4	9,7	12,7
Construction of Svetogorsk by-pass		4,8		4,8
Construction and reconstruction of road approaches to the new port zones Primorsk and Vysotsk from main roads		22,8	14,4	8,4
Reconstruction of the road St. Petersburg-Sortavala		89,0	31,0	58,0
Reconstruction of the road "Russia" M10, E105		98,3	47,8	50,5
Reconstruction of the highway St. Petersburg-Pskov with by-pass of the city of Gatchina		158,0	58,0	100,0
Luga by-pass (finishing)		78,0	78,0	
Approaches to new port zones on the coast of Luga bay		21,0	10,0	11,0
Kingisepp by-pass (finishing)		6,6	6,6	
Reconstruction of the road "Kola", M-18, E-105		161,0	161,0	
Construction of the road section Kisel'nia-Khvalovo		18,5	18,5	
Construction of the road Lodeinoe Pole-Tokari-Pai-Petrozavodsk with a new bridge over Svir' river		63,2		63,2
Reconstruction of the road Lodeinoe Pole-Vytegra		21,5		21,5
Reconstruction of the road Lodeinoe Pole-Tihvin-Budogosch		39,6	9,6	30,0
TOTAL FOR ROADS		1219,0	820,1	398,9

*/ till 2005

1	2	3	4
AIR TRANSPORT			
International terminal "Pulkovo-3"	174,0		174,0
Hotel with business centre in the airport zone	140,0	40,0	100,0
Cargo terminal at the airport "Pulkovo"	12,0	12,0	
TOTAL FOR AIR TRANSPORT	326,0	52,0	274,0
PIPELINES			
Construction of 3-d pipe-product line*/	1139,5	1139,5	
PORTS			
Big port of the city of St. Petersburg (container terminal in the sea trade port of St. Petersburg, construction of a port in Lomonosov, "Litke Base" in Kronstadt)	170,5	170,5	
Vyborg, replacement of the equipment and making the approaching channel deeper	23,0	23,0	
Sea trade port of Vysotsk, making the approaching channel and moorage deeper, construction of a new moorage and equipment	9,0	9,0	
Construction of a new oil-product terminal on Vysotsk island	350,0	350,0	
Port of Primorsk – further development	2320,0	1320,0	1000,0
Port of Ust'-Luga (entire complex)	2800,0	232,0	2568,0
Baltic ferry line Ust'-Luga- Zassnitz	88,5	88,5	
Port in Batareyinaya Bay	700,0	370,0	330,0
River port of St. Petersburg	650,0	650,0	
TOTAL FOR PORTS	7111,0	3213,0	3898,0
TOTAL FOR ALL TRANSPORT	12491,5	6353,6	6137,9

*/ till 2005

1	2	3	4
ST.PETERSBURG			
Railway transport	680,0	180,0	500,0
Roads	205,3	205,3	
Air transport	326,0	52,0	274,0
Sea Ports	170,5	170,5	
River Port	650,0	650,0	
Total, St. Petersburg	2031,8	1257,8	774,0
LENINGRAD REGION			
Railway transport	2016,0	949,0	1067,0
Roads	1013,7	614,8	398,9
Pipelines	1139,5	1139,5	
Sea ports	6290,5	2392,5	3898,0
Total, Leningrad Region	10459,7	5095,8	5363,9
TOTAL FOR ALL TRANSPORT	12491,5	6353,6	6137,9

Investment volume (costs) was gathered from various sources: planning indicators of committees and departments of different branches, project documentation or investment projects for transport objects construction, from interviews with representatives of managing transport companies published in official issues "Business Petersburg", "Commerzant" etc. Or received during business negotiations.

Correlation Euro/Rouble – 35,6, Euro/USD – 1,16 on 06.10.03.

SOURCES FOR SECOND PART

1. Leningrad Region>Economic and investments>Transport> Baltic Pipeline System/ Conception of Federal Program/ The Regional Program of progressing and improvement of motorway's network of Leningrad Region/ Communications/Characteristics of tendency of development of foreign trade motorways/ daily news, [<http://www.lenobl.ru>]
2. St.Petersburg [<http://www.spb.ru>]
3. "The concept of construction sea passenger ferry port complex in Lomonosov", Administration of the City of Saint-Petersburg, Territorial management of the City of Lomonosov, 2003
4. "The materials for projecting and construction of the high-speed railway line Saint-Petersburg-Helsinki, "Lengiprotrans" Ltd, 2003
5. "The concept of development of sea trade port Kronstadt (Litke Base area in Kronstadt, island Kotlin)", "Moby-Dick" Ltd, 2003
6. "Leningrad Region – Transit to Future", Liki of Russia, Saint Petersburg, 2002
7. "The developing suggestions on definition of the Saint-Petersburg suburb zone borders ", ZAO Petersburg NIPIGrad, 2002
8. "The Regional Program of progressing and improvement of motorway's network of Leningrad Region till 2010 with the prognosis for 20 years", NIPI of territorial development and transport infrastructure, 2002
9. "The Baltic Palette Project", INTERREG II C, PHARE, TACIS, 2000
10. "The E-18 – road of co-operation", INTERREG II C, PHARE, 2000
11. "Enhancing Synergy": Integration of Strategic Policies of the City of St. Petersburg and the Leningrad Region in the context of the Northwest Region" TACIS, 2000
12. "The Program of the Saint-Petersburg Department of Railway progressing till 2005", The Saint-Petersburg Department of October Railway, 2000
13. The principal direction of development and increasing of efficiency of working of Railway till 2000-2005", The Saint-Petersburg Department of October Railway, 2000
14. "The influence of construction of a new by-pass of Vyborg on the development of infrastructure of the City", LTD "Plancenter", Helsinki, RosNIPI of Urbanistica, Saint-Petersburg, 1999
15. "The Concept of Social Economic and Town-Planning Development of the Leningrad Region " RosNIPI of Urbanistica, 1998
16. "The Scheme of the functional zoning of the coastal territories taking into account the forcing forming of Federal cargo ports system of the Finnish Gulf" ", RosNIPI of Urbanistica, 1997
17. "The General Scheme of Development of Transportation-Technological Port Complexes in the Finnish Gulf", LenmorNIIproject, 1997
18. "General Plan of Leningrad and Leningrad region till 2005", LenNIPI of Genplan, 1987

MAPS

The maps based on Map "Saint-Petersburg and Leningrad Region", guide-book, scale of SPB 1: 35000, scale of Leningrad Region 1:500000, Copyright "P-2", 002629, Saint-Petersburg, 2001

TRANSPORT AND ACCESSIBILITY OF THE TERRITORIES OF THE CITY OF ST.PETERSBURG AND LENINGRAD REGION

A natural continuation of transport corridors of the Leningrad Region realising transport service of the city and region's population is a road-street network and transport infrastructure of St. Petersburg.

Street-road network

St. Petersburg street- road network spreads on 3320 km. Street structure from the very city foundation had very clear network structure (see Figure 14).

Main streets which are the centre of public and business activities are the base of network planning structure – Nevsky pr., Bolshoy pr. of Vasilievsky Island, Bolshoy pr. of Petrogradskaya side, Kamennooostrovsky pr., pr. Engelsa, Piskarevsky pr., pr. Kosygina, Sedova st., Bukharestskaya st., Moskovsky pr., pr. Stachek and others highways connecting with external roads. Substantial role in St. Petersburg transport system have embankments of the r. Neva, rivers and channels in its delta. The most significant are embankments of Obvodny Channel as well as the right bank of Neva and B. Nevka, providing nearly permanent order of vehicular traffic. Island blocks are connected with each other and continental parts with several tens of bridges. In the city boundaries are thrown 15 big road-transport drawbridges across r. Neva and its arms (Bolshaya and Malaya Nevka), the total number of bridges on the street-road city network is 407. Width of the traffic areas of the most main streets and embankments provides placing from 2 to 4 (on the some streets – to 5) traffic lanes in each direction. Daily volume of traffic on the most crowded parts of the network culminates 100 thousand cars per day. Speed-limit is 60 kilometers per hour, average speed of cars traffic taking into consideration stoppages on the controlled nodal points – about 45 kilometers per hour. On some parts of the transport network connecting the city with suburbs speed-limit is 80 and 90 kilometres per hour. Delays in separate road nodal points because of their overload may bring to loss of time for 10-20 and even more minutes. There are more than 10 constantly overloaded

nodal points in the central part of the city and no less than 20 - in peripheral districts.

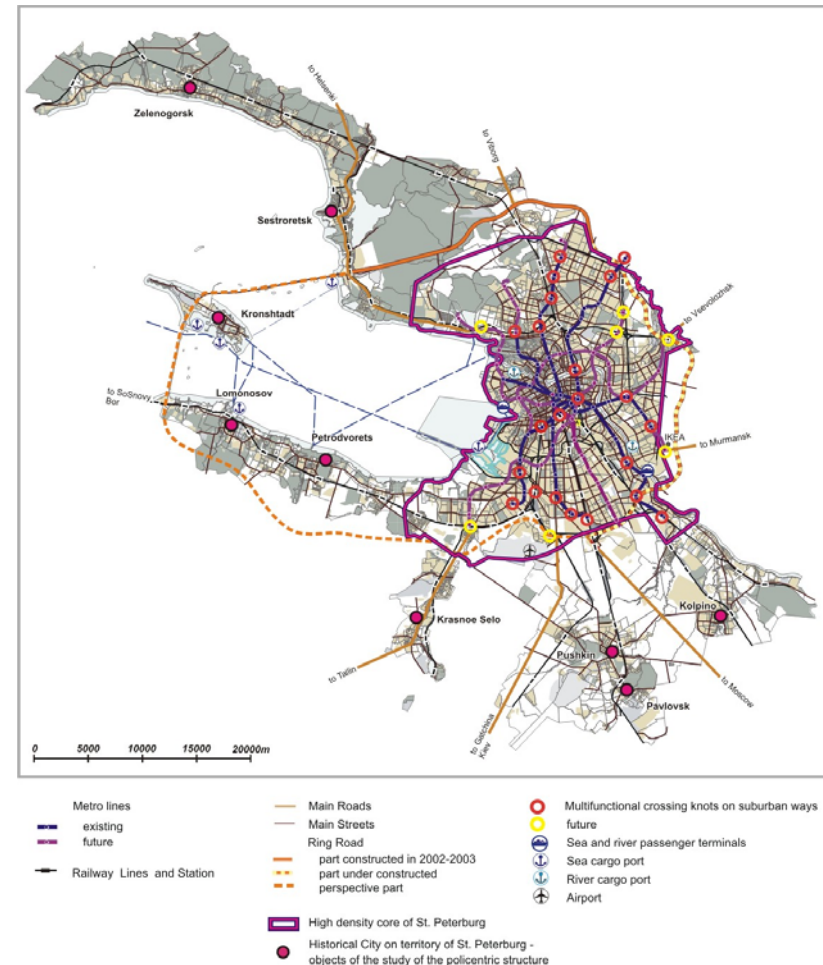


Figure 14. Transport infrastructure of St.-Petersburg

Last years decrease of speed of traffic because of the overload can be seen not only in road nodal points but also between them as a result of occupation of traffic area by cars that are not riding. In 2001 construction of the Ring Road was started, at present time the north part of the road is built, east and south-east parts are under construction.

Analysis of St. Petersburg territory accessibility by individual car (Figure 15) demonstrates that densely built-up city territory is placed in the zone of 40-60 minutes accessibility, peripheral districts - in the zone of 1-2 hours accessibility from Nevsky pr.

In the long-term period is planned the completion of the Ring Road construction (bridge across Neva has to be accomplished to 2005, eastern part – to 2007 year, western part with complex of protective structures - after the end of building in 2008 year). It is planned to accomplish building of the new radial and ring roads in the city boundaries, reconstruct main streets. Variants of building of arterial highway system concerning St. Petersburg central part are discussed. We set our hopes on creation of a new system of traffic organisation, development of a system of non-street parking. Some problems are solved by taking down of tram-lines located in the central part of the city.

Realisation of listed actions could provide some improvement of traffic conditions, however appeared “surplus” of carrying capacity will be used by cars’ owners who are dissatisfied by quality of public transport service.

Taking into consideration differ directed trends it is possible to think that prospect accessibility of central territory by cars will keep at the present-day level. It is possible to expect some improvement of peripheral districts accessibility between each other.

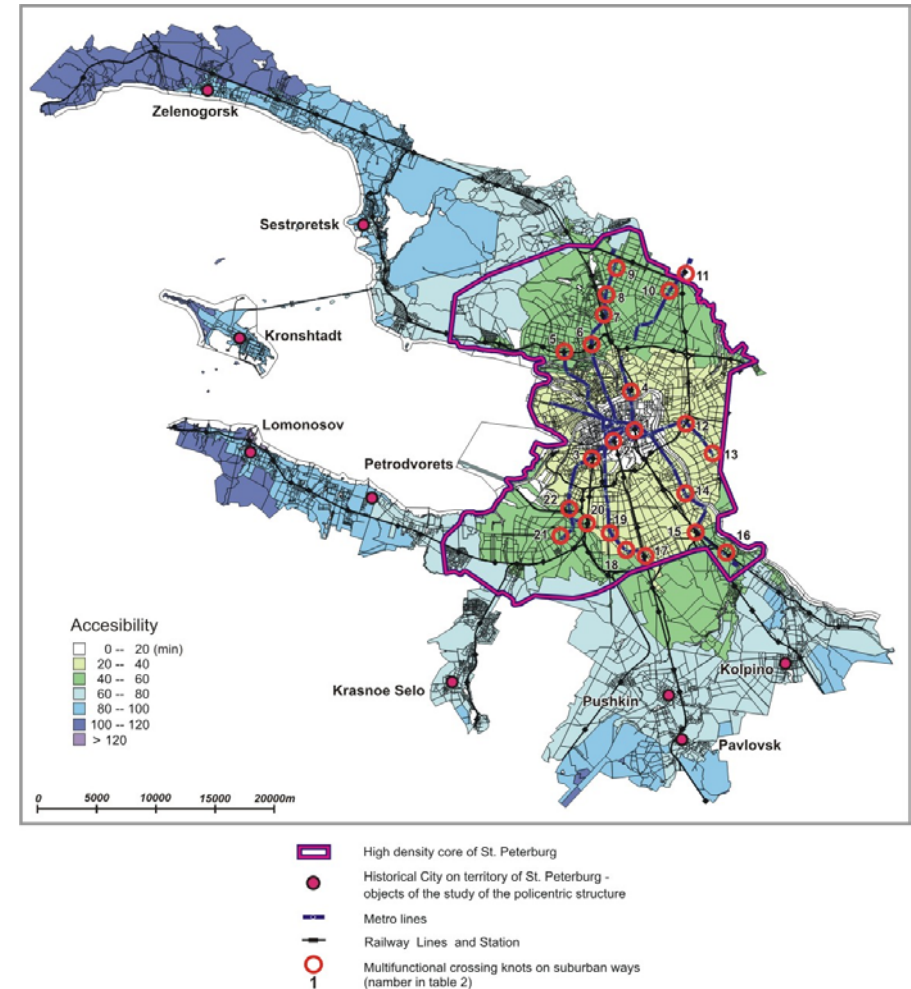


Figure 15... Accessibility of Nevsky prospect by individual car, 2003

Public transport

St. Petersburg public transport is represented by metropolitan, tram, trolleybus, bus and taxi transport. Suburban railway roads actively participate in city transportations.

Volume of transportations on public passenger transport, 2001

Kind of transport	Volume of passenger traffic, mln passengers per year	%%
Metropolitan	880	33,5
Tram	420	16,0
Trolleybus	340	12,9
Bus and taxi	950	36,0
Railway intraurban	40	1,5
Total	2630	100

The source of information: Development of St. Petersburg Metropolitan and Other Kinds of High-Speed out of Streets Transport up to 2015 Program, St. Petersburg Administration, 2002

St. Petersburg Metropolitan represents a network composed of four lines (total spread is nearly 100 km in double-line calculations). There are 58 stations lines are connected by six interchange stations. 11 metropolitan stations provide transfer to the railway stations. Volume of passenger traffic comes to about 2.5 mln people per day (during working day in autumn 2003). Boarding on the high-density stations culminates 90 thousand people per day, maximum passenger flow in the metro vestibules is 12 thousand people per hour (at the entry), at spans – to 40-45 thousand people per hour (in one direction).

In the future is planned to continue metropolitan development: in 2005 will be set in operation the station in the district of Dolgoe Lake, then – the new stations and metro vestibules on the functioning lines in the core of St. Petersburg (Admiralteyskaya, Sportivnaya-2 and Baltiyskaya-2 stations). By the end of 2015 year it is planned to finish the construction of Frunzensky and Krasnoselsky radiuses, to start the

construction of Ring line. Total spread of the network is supposed to increase to 140 km, number of stations – to 79 units. At the same time the growth of city requirements in high-speed passenger transport with good transportation capacity substantially pass ahead of metropolitan development. Main reason for this lag is insufficient financing of the construction. City Administration takes into consideration the opportunity of using cheaper kinds of high-speed transport, for example, “overground express” suggested by Bombardier Company.

The opportunity of more intensive using of urban sector of railway roads for passenger transportations have been discussed for many years however the increase of frequency of passenger’ trains traffic comes up against freight railroads transportations.

Tram transport keeps its importance in peripheral districts providing mainly passengers’ transportation to the metro stations. Trolleybuses are actively used in the city core and at its periphery. Bus transport (including minibuses – taxis) started to provide all kinds of transportations - transportation to the interchange nodal points as well as inter-district and suburban lines. Last years the network of buses and minibuses began to react on population needs actively. Improvement of quality in all city districts especially in suburban ones is considered as dependent from bus transport development.

At present time public transport serves from 80 to 88 % (by different estimations) from the total number of passengers.

Accessibility analysis of Nevsky pr. by Public Transport (Figure 16) demonstrates that nearly all territory of St. Petersburg high-density Core is in the zone of 40-60 minutes accessibility. A trip from Nevsky pr. to suburbs may take up to 1 hour (to zones bordering with railway stations) and up to 1.5 – 2 hours (to zones distant from railway stations).

In the future it is possible to expect some increase of city Core accessibility due to development of metropolitan network and suburban railway traffic. For sure the improvement of accessibility for some territories may be gained by the development of bus transportations. Accessibility analysis of Nevsky pr. by Public Transport (Figure 16) demonstrates that nearly all territory of St. Petersburg high-density

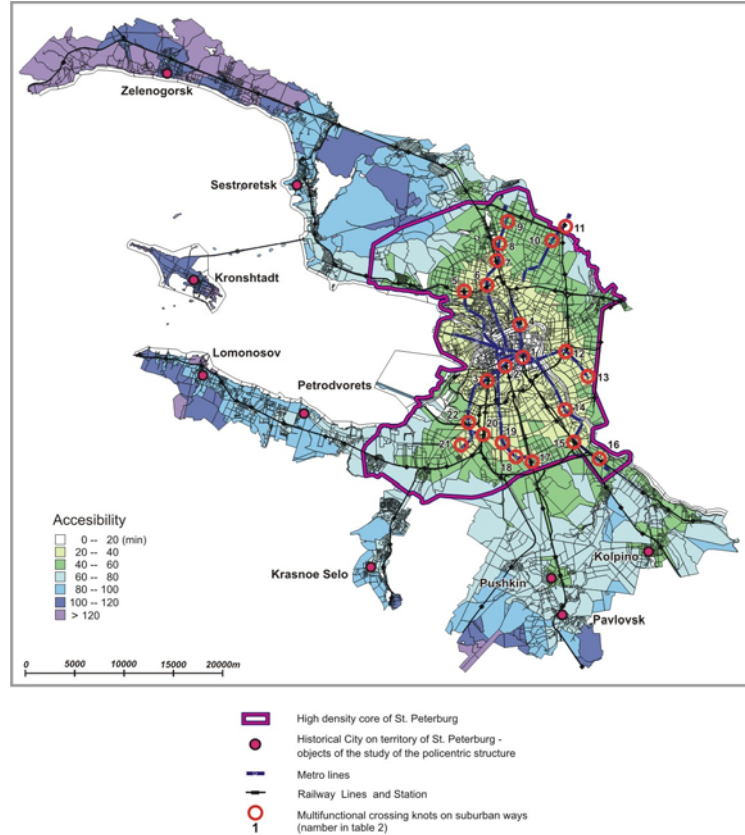


Figure 16. Accessibility of Nevsky prospect by public transport, 2003

Core is in the zone of 40-60 minutes accessibility. A trip from Nevsky pr. to suburbs may take up to 1 hour (to zones bordering with railway stations) and up to 1.5 – 2 hours (to zones distant from railway stations).

In the future it is possible to expect some increase of city Core accessibility due to development of metropolitan network and suburban railway traffic. For sure the improvement of accessibility for some territories may be gained by the development of bus transportations.

External passenger transport links of St. Petersburg

28 automobile roads and 12 directions of railways connect St. Petersburg and Leningrad Region with each other. The most important roads have not only regional but also national significance: such roads as Moscow – St. Petersburg, St. Petersburg – Petrozavodsk – Murmansk, St. Petersburg – Helsinki, St. Petersburg – Pskov, St. Petersburg – Tallinn. The most important railways as well as automobile roads are used not only for suburban but also for national communications. Main directions of railways are equal to listed above directions of automobile roads.

Accessibility of the Nearest to St. Petersburg Cities – Centres of the Regions

Planning directions	Distance	Railway station	Automobile road	Air communication
Moscow	650 km	4,5 hours (day express) – 8 hours (night express). In the perspective – 3 h.	10 hours (without stoppage)	1 hour 5 min – 1 hour 25 min
Helsinki	400 km	6 hours. In the perspective – 3 hours	6 hours (including crossing of the boundary)	50 – 55 min
Petrozavodsk		9 hours		no, possible in perspective
Novgorod	220 km	3,5 – 4 hours	3 – 3,5 hours	no, possible in perspective
Pskov		5,5 hours		no, possible in perspective
Vilnius		15 hours		no, possible in perspective
Riga		13 hours		no, possible in perspective
Tallinn	400 km	8,5 hours (before 1991– 5,5 hours).	6 - 7 hours (including crossing of the boundary)	no, possible in perspective

Long-distance trains arrive at Moskovsky railway station (Moscow and southern directions), Vitebsky railway station (southern directions, Baltic Sea Region, Poland, Germany), and since 2003 – at a new Ladozhsky railway station (Helsinki, Moscow, northern and eastern directions).

Moskovsky and Vitebsky railway stations are allocated in the historical centre of St. Petersburg, Ladozhsky - at the boundary of historical centre and new districts. In the complex with railway stations are placed metropolitan stations. Accessibility of railway stations from the districts located in the high-density Core of St. Petersburg is in the limit of 1 hour.

Railway stations serve also trains of suburban communication that provides accessibility of railways in the suburban settlements from listed stations from 30 minutes to 1 - 2 hours.

There is one international airport in St. Petersburg serving as local (terminal Pulkovo-1) as international lines (terminal Pulkovo-2). Carrying capacity of the terminal №1 is 1 200 people per hour, of the terminal №2 – 800 people per hour.

The airport is located in the southern part of the city on the distance of 19 km (Pulkovo - 1) and 15 km (Pulkovo – 2) from Nevsky pr. Each terminal of the airport connect with the city by bus and taxis lines (15-20 min to the nearest metro station)

Accessibility of St. Petersburg territory from the terminal Pulkovo – 1 is demonstrated on the Figure 17.

Present-day tendency of high-speed interregional communications development was caused first of all by the growth of passenger flows between Moscow, St. Petersburg and Helsinki. It is possible that after joining Estonia into EC (since May of 2004) the direction St. Petersburg – Tallinn will be made more active (see Figure 18).

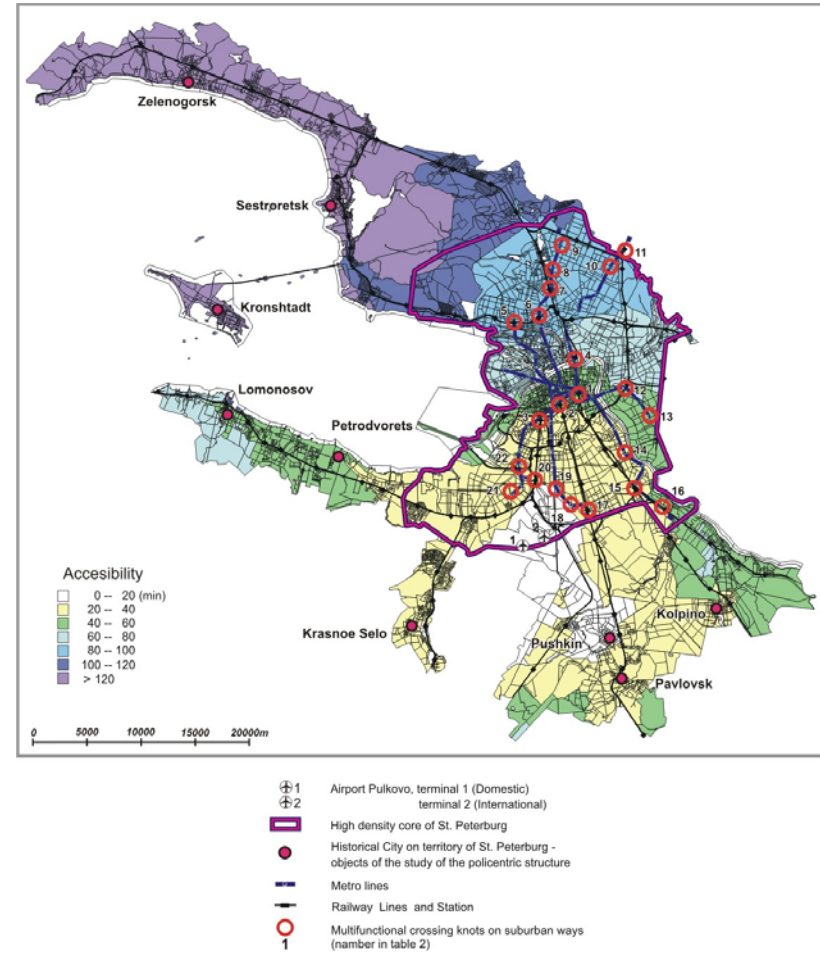


Figure 17. Accessibility of Airport "Pulkovo" by individual car, 2003



Figure 18. Mainstream directions of development interregional passenger transport

On the directions St. Petersburg – Moscow and St. Petersburg – Helsinki modernisation of track facilities with the purpose to increase the speed of communication is currently carried out. So the speed of day passenger expresses traffic culminates on some areas 160 km per hour.

In 1990 there was set an objective to develop high-speed trunk-railway St. Petersburg-Moscow on the detached highway (for this purpose were provided sites and in 1997 started preparation works for the construction of the station complex in St. Petersburg). However at the end of 1990 this project was frozen and trends of its realisation are not clear at the present time.

Last years the project on development of high-speed highway between St. Petersburg and Helsinki (“Pendolino”) is actively discussed.

Characteristics of High-Speed Trunk-Railway St. Petersburg – Moscow

Length	654 km
Width of track	1520 mm
Electrification system	Alternating current 2x25 kilowatt
Speed:	
- Constructional	350 km/hour
- Route	250-300 km/hour
Time	2,5-3 hour

Source: <http://www.vsm.ru>

Accessibility of historical cities around the high-density core of St.-Petersburg

In the view of studying of polycentrism development we need to consider suburban settlements accessibility (located on the territory of St. Petersburg and Leningrad Region) not only to Nevsky pr., but also to interchange nodal points which are situated in the high-density Core of St. Petersburg. On this territory we identify 20 -25 large interchange nodal points , which are main multifunctional centres of business activity and service. About 5 – 10 nodal points are heading toward to become multifunctional centres. Significant part of suburban correspondences is completed in these nodal points . Suburban passengers even if they use additional kinds of transport on the urban territory evaluate the distance first of all on accessibility of this interchange junction.

The list of the most significant multifunctional interchange nodal points and their characteristic is represented in the table on the page 46, the nodal points are shown on the scheme of the transport infrastructure (Figure 14) and on the map of Nevsky pr. accessibility by public transport (Figure 16).

Multifunctional Interchange Nodal points on the links of St.Petersburg and Suburban Territories

No		Railway station (directions)	Metropolitan (number of lines)	Suburban and interurban bus	Accessibility to Nevsky pr., min
Multifunctional interchange nodal points in the city centre					
1	Moskovsky railway station	Kolpino, Tosno, Volkhovstroy, Kirishi, long-distance trains to Moscow, South and East	2 (perspective– 3)		5
2	Vitebsky railway station	Pushkin, Pavlovsk, long-distance trains to South, Baltic Sea Region, Poland, Germany	1 (perspective– 2)		15
3	Baltiysky railway station	Gatchina – Luga, Krasnoe Selo, Petrodvorets, Sosnovy Bor	1	Kingisepp, Slantsy, international lines to Tallinn, Riga, Vilnius, Berlin	15
4	Finlandsky railway station	Sestroretsk, Zelenogorsk – Vyborg, Toksovo – Sosnovo, Vsevolozhsk	1	Vyborg, Primorsk, Toksovo	15
Peripheral multifunctional interchange nodal points					
5	Staraya Derevnya	Sestroretsk	1	Kronshtadt, Sestroretsk	20
6	Chyornaya Rechka	Sestroretsk	1	The same	20
7	Udel'naya	Zelenogorsk – Vyborg	1		25
8	Ozerki		1	Sertolovo, Vyborg	30
9	Prosvescheniya pr.		1	Sertolovo, Toksovo	30
10	Grazhdansky pr.		1	Toksovo	30
11	Devyatkino	Toksovo, Sosnovo	1	Toksovo	35
12	Ladozhsky railway station	Volkhovstroy, long-distance trains to Helsinki, Moscow, East	1 (perspective– 2)	Vsevolozhsk, Koltushi	20
13	Dybenko st.		1	Kirovsk	25
14	Lomonosovskaya		1	Kirovsk, Kirishi	25
15	Obukhovo	Kolpino, Tosno, Volkhovstroy	1	Kirishi	30
16	Rybatskoe	Volkhovstroy, Kirishi	1	Kirovsk	35
17	Cupchino	Pushkin, Pavlovsk	1		35
18	Zvezdnaya		1	Kolpino, Pushkin	30
19	Moskovskaya		1	Pushkin, Gatchina	30
20	Leninsky pr.	Gatchina – Luga, Krasnoe Selo, Petrodvorets, Sosnovy Bor	1		30
21	Veteranov pr.		1	Krasnoe Selo	35
22	Avtovo		1	Petrodvorets, Krasnoe Selo	25

Analysing transport communications of separate settlements in suburbs of St. Petersburg we get following information. Accessibility of central zones of suburban settlements from peripheral multifunctional interchange nodal points varies from 15 to 50 minutes. The nearest are Pushkin, Kolpino, Pavlovsk. They connect with St. Petersburg by railway and bus communications.

Transport Accessibility of St. Petersburg Suburban Settlements

Settlement	Distance*), km	Railway accessibility *), min	Bus accessibility *), min
Kronshtadt	39	-	40
Sestroretsk	27	45	30
Zelenogorsk	50	40-50	60-70
Kolpino	19	15	25
Pushkin	17	11	20
Pavlovsk	23	16	25
Krasnoe Selo	17	25	20
Petrodvorets	22	25-30	25
Lomonosov	31	40-45	

*) from peripheral interchange nodal points indicated in the table on the page 46

In 2003 year there was carried out the investigation of passenger flows at the boundary with the high-density Core of St. Petersburg. Input flow in the Core is evaluated as 143 thousand of people in 3 morning rush-hours (March 2003), output flow – in 71 thousand of people. 51 percent of these people use railway to enter the Core and only 37 percent use railway when they departure. Among those who use automobile transport about 60-80 % use taxis and buses.

The flow increase in July: on input insignificantly – 6-7% (share of railways decrease and share of automobile transport growth), on output - rise steeply on 40-50% (share of railways become rather more than the share of automobile transport).

Comparing with 1987 input flows has increased more then in 1.2 times at that the flow on automobile transport has risen in 2.6 times. Output

flow has decreased and come to a little more then 80% from the value in 1987 and output flow on the railway the flow has decreased to 41-42% (from the value in 1987). See figure 19.

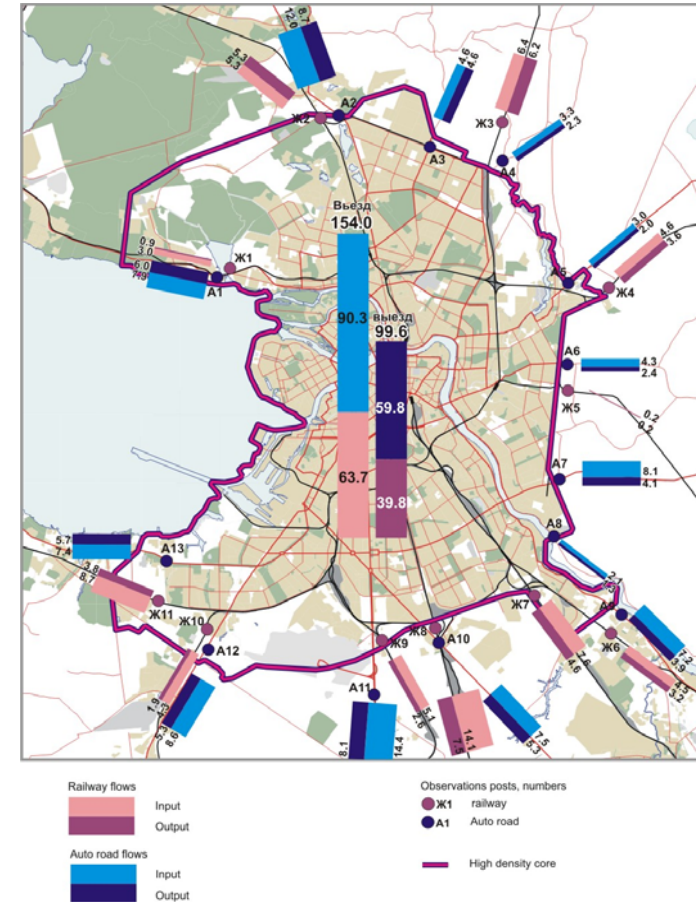


Figure 19. Input/output passenger flows between high-density core of St.-Petersburg and others territories, July 2003 .
Source: Report of Master Plan project for St. Petersburg (Published on "KIPS-info" #2 December 2003)

Leningrad Region

The main public transport servicing suburban passenger flow is an electrified railway that is well developed in the Leningrad Region. Besides, there was an extensive bus network of intercity and commuter on the territory of Region. However a number of electrified suburban trains pairs in 24 hours decreases, as well as a number of bus routs and bus trips connecting settlements of the Region with St. Petersburg and districts centres with other districts settlements.

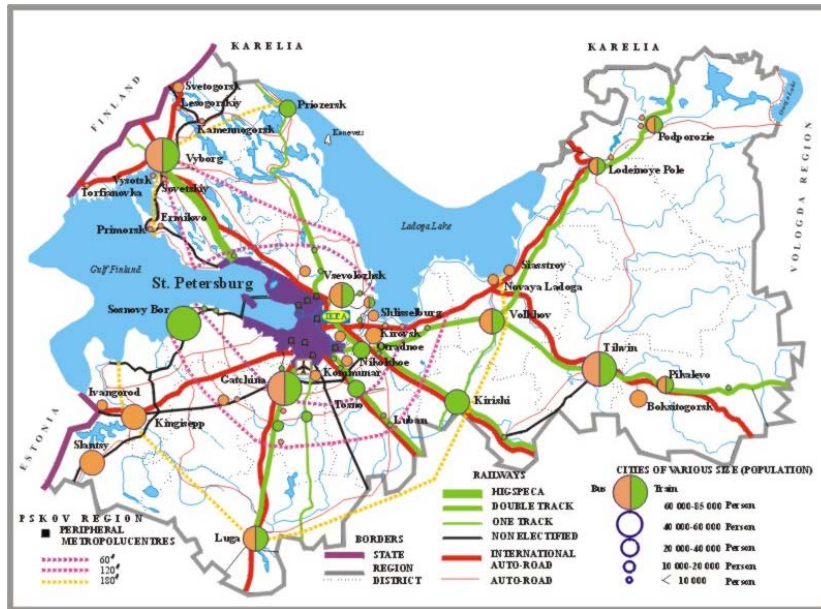


Figure 20. Transport services for Leningrad Region population, 2003

Data of table below given shows that the electrified railway line services practically one half of urban settlements. The largest concentration of electrified double-track railway lines is observed in the areas closely adjacent to St. Petersburg in the suburban area.

Analysis of suburban train schedule has shown that the average speed at double-track electrified railway is in the range of 53-57 km/h. High-speed suburban electric train on the line St. Petersburg-Vyborg makes 94-95 km/h.

20% of the whole number of urban settlements are serviced by intercity and suburban bus routes using federal motor roads. An average speed varies in the limit 42-47 km/h depending on direction. Due to the highest speed of buses in the Western direction (motor road “Narva”) the intercity bus services most of passenger flow in comparison with non-electrified single-track railway.

Thus, urban settlements located in 50-km radius from St. Petersburg have one-hour accessibility from the main peripheral city interchange nodal points, those ones located in 95-100-km radius have two-hour accessibility, those ones located in 140-km radius have tree-hour accessibility.

Transport accessibility was defined till peripheral interchange nodal points (see table on the page 46) where main sections of railway lines or main sections of motorways are intersected with underground (subway) lines or other modes of urban transport.

It should be noted that at the moment, thanks to transport accessibility (1.5 hour) provided by fast trains, this area could be completed by Vyborg (~80 thousands citizens), which is not only a transport nodal point, industrial and historical-and-cultural centre on the boundary territory, but also the focal centre for a local polycentric formation with towns of Vysotsk, Primorsk, urban settlement Sovetsky.

Domestic and international airports accessibility is an important indicator of the settlements’ polycentric structure. The airport “Pulkovo” service passengers from the Leningrad Region, who use air transport. The airport accessibility is provided by city buses and rout taxis routs from Moskovskaya subway station. The travel time is 15-20 minutes. The time spent inside the city to get to the airport is 1-1,5 hours depend on a peripheral interchange nodal point’s location. Thus, passengers from the 1-hour accessibility zone get to the airport in 2-2,5 hours, from the 2-hour accessibility zone – 3-3,5 hours, from the 3-hour zone – 4-4.5 hours.

We put forward to return to the problem of restoration of domestic airlines to connect distant towns (Voznesenie, Podporozhie, Lodeinoe Pole, Slantsy, Tikhvin

Urban settlements serviced by regional public transportation
in Leningrad Region

Town	km	Mode of transport		Urban settlements	km	Mode of transport	
		Railway	Bus			Railway	Bus
60-km remoteness from St.Petersburg							
1.Vsevolozhsk	24	El.2 track	+	1. Toksovo	25	El.2 track	
2.Sertolovo	27		++	2. Kuz'molovsky	18	El.2 track	
				3. Rakh'ya	42	El. 2-1 track	
				4. named after Morozov	45	El. 2-1 track	
				5. named after Sverdlov	51		+
				6. Dubrovka	62	El. 2-1 track	
3.Kirovsk	55		++	7. Pavlovo-upon-Neva	45	El.1 track	+
4.Otradnoye	34	El..2 track	+	8. Mga	50	El..2 track	
5.Shlisselburg	49		++	9. Sinyavino	63		++
6.Tosno	53	El..2 track		10. Krasnyi Bor	23		+
7.Nikolskoye	33		+	11. Fornosovo	20	El..2 track	
8.Communar	25	El..2 track	+	12. Ul'yanovka	36	El..2 track	
9. Gatchina	46	El..2 track	++	13. Taitsy	35	El.1 track	+
				14. Kobrinskoye	42		+
				15. Vyritsa	67	El..2 track	
				16. Roschino	51	El..2 track	
				17. Bol'shaya Izhora	47	El. 2-1 track	
				18. Lebyazh'ye	57	El. 2-1 track	
Total: from 27 urban settlements – 19 are serviced by electrified railway							

Town	km	Mode of transport		Urban settlements	km	Mode of transport	
		Railway	Bus			Railway	Bus
95-100-km remoteness from St.Petersburg							
10. Lyuban'	88	El..2 track		19. Ryabovo	75	El..2 track	
				20. Priladozhsky	80		++
				21. Naziya	93	El..2 track	
				22. Siversky	67	El..2 track	
				23. Druzhnaya Gorka	72		+
11.Volosovo	70	1 track	+	24. Kikerino	65	1 track	
12.Sosnovyi Bor	92	El.2-1 track					
Total: from 9 urban settlements – 5 are serviced by electrified railway							
140-150-km remoteness from St.Petersburg							
13.Vyborg	141	El2 track	++	25. Sovetsky	141	1 track	+
14.Primorsk	121	1 track	+				
15. Priozersk	142	El.2-1 track					
16. Kingisepp	138	1 track	++				
17. Luga	139	El2 track	++	26. Tolmachyovo	124	El2 track	
18. Kirishi	115	El. 1 track		27. Budogoshch'	149	El. 1 track	
19. Volkhov	122	El2 track	++				
20. Novaya Ladoga	127		++				
21. Syas'stroi	137		++				
Total: from 12 urban settlements – 7 are serviced by electrified railway							
200-km remoted area from St.Petersburg							
				28. Kuz'nechnoye	161	El. 2-1 track	
22.Svetogorsk	207	1 track	+	29. Lesogorsky	201	1 track	+
23.Kamennogorsk	181	1 track	+				

ACTION GROUP 2 – Transport Corridors Network St.-Petersburg and Leningrad Region, Russia

Town	km	Mode of transport		Urban settlements	km	Mode of transport	
		Railway	Bus			Railway	Bus
24. Vysotsk	171		+				
25. Ivangorod	162	1 track	++				
26. Slantsy	192	1 track	+				
27. Tikhvin	200	2 track	++				
Total: from 8 urban settlements –2 are serviced by electrified railway							
300-400-km remoted area from St.Petersburg							
28. Boksitogorsk	245		+	30. Yefimovsky	300	2 track	+
29. Pikalyovo	262	2 track	+	31. Svir'stoi	255		+
30. Lod. Polye	239	El. track	++	32. Vazhiny	300		+
31. Podporozh'ye	285	1 track	+	33. Nikolsky	270		+
				34. Voznesen'ye	376		+
Total: from 9 urban settlements – 1 are serviced by electrified railway.							
Grand total: from 65 urban settlements – 34 are serviced by electrified railway							

*In perspective - */construction of a second track and electrification, **/electrification, ***/construction of a second track*

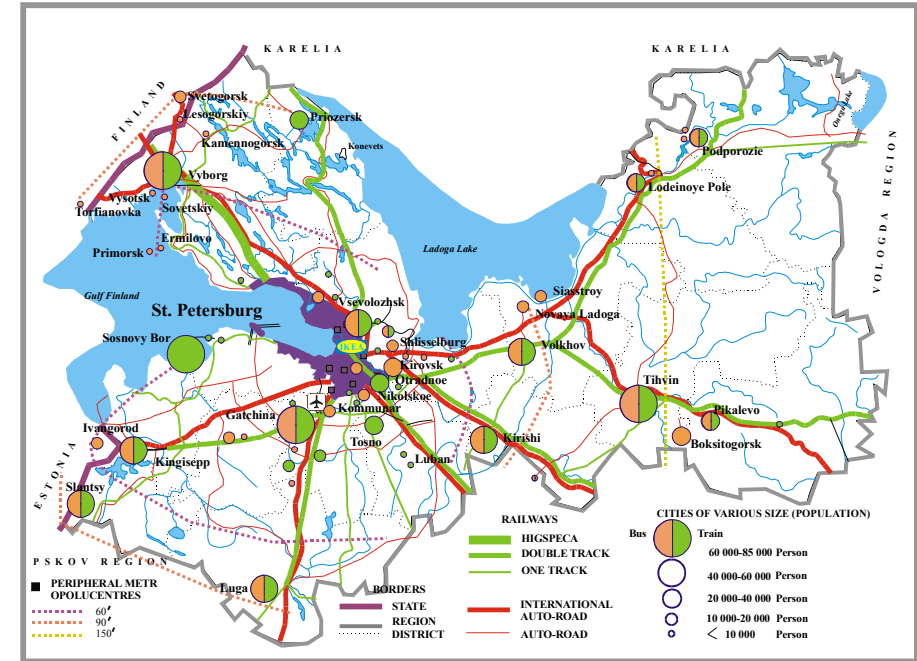


Figure 21. Transport services for Leningrad Region population, 2020

Removing of «bottle necks» of the transportation system and further development of the transport infrastructure will allow to increase speed of traffic communication, especially, in those railway directions (as railway mode of transport will have a priority in future), where electrified double-tracks are expected to be installed, as well as reconstructed and newly constructed motor roads with cities' bypasses and artificial constructions along the routes.

Improvement of transport system taking into account high-speed traffic in some directions (St. Petersburg – Vyborg - state frontier; St. Petersburg - Narva; St. Petersburg - Moscow) with availability of speeds up to 200 km/h and introduction of non-stop trips to industrial centres similar to Vyborg experiment will assist to include such towns as Novaya Ladoga, Syas'troi, Volkhov, Kirishi, Kingisepp, Ivangorod, Luga in the area of 1.5-2-hour transport accessibility of St. Petersburg.

However, change in population number, development of public transportation, transport influence on reduced time consumption and establishing of polycentric formations in Leningrad Region should be a task for the next Project of the Baltic Palette.