

Peculiarities and Factors of St Petersburg Metropolitan Area Spatial Development in Post-Soviet Period.

Leonid Limonov, Higher School of Economics, Leontief Centre, St Petersburg, Russia

Introduction

In the modern economic context, it is metropolitan areas (with their inherent agglomeration effects) that are the main drivers of national economies. At the same time, metropolitan areas do not yet play the same role in Russia as they do in the developed and most rapidly developing countries. Apparently, one of the reasons behind this lies in defective spatial development which promotes inefficiency and leads to extra costs thereby reducing the positive impact of agglomeration effects. Analysis of characteristics and factors of development of Russian metropolitan areas in the post-Soviet period has not yet attracted attention of specialists in spatial economy and is rarely used in research. At the same time, the spatial development of metropolitan areas in Russia retains many of the features that existed in the Soviet times, and market-driven transformations in the structure and intensity of land use are very slow and do not always have a positive effect. Apparently, the institutional characteristics of land use and development have a significant impact on the development of agglomerations. Another important institutional factor of the spatial development is a very low level of interaction between municipalities and/or constituent entities of the federation which accommodate the agglomeration processes and developing metropolitan cities. The Urban Planning Code and other instruments that govern urban planning do not include the concept of agglomeration (or metropolitan area); therefore Russian municipalities and/or constituent entities of the federation cannot combine their efforts to develop plans for metropolitan area development. A particularly striking example of this problem is St. Petersburg metropolitan area

Limits of St Petersburg Metropolitan Area

In order to determine the boundaries of a metropolitan area, it is important that the area in question covers nearly the entire labor market, the consumer market and the most actively used recreation areas related to St. Petersburg. The corresponding area extends to about 60 km from the downtown (which currently corresponds to approximately 70 to 80-minute travel and covers all the areas within the administrative boundaries of St. Petersburg, plus Lomonosov, Gatchina, Vsevolozhsk and Shlisselburg). The area covers at least 95.0% of all commuting trips on weekdays that at least partially pass through the metropolitan area. These traffic trips to a large extent shape the labor and service markets within the metropolitan area. According to 2004 data, whereas the total number of passenger trips by all types of municipal and suburban transport was 3,320 million per year, trips between the densely built-up areas in St. Petersburg and suburbs in Leningrad Region amounted to only 54 million trips per year or 1.6% of all trips, which undoubtedly exceeds the number of commuting trips from outside of the metropolitan area to its peripheral districts. The percentage of commuting trips to the metropolitan area is limited to the total number of employed people living outside of the metropolitan area within an hour's travel. These are about 200 thousand people, with the main inhabited localities within the surrounding ring (Sosnovy Bor, Vyborg, Priozersk) having a satisfactory number of places of employment.

The area of the so limited metropolitan area (excluding the water bodies) is 8,490 sq. km; the resident population is 5,240 thousand people (2010); and the density of population is 617 people per sq. km. In St. Petersburg, the continuous built-up areas cover 423.8 sq. km (5.0% of the metropolitan

area), the core of the city center is 24.2 sq. km (0.2%), and the central business district is 7.83 sq. km (0.09%).

Population

The resident population within the administrative boundaries of St.Petersburg reached its historical high in 1990 (5,002 thousand people), dropped by 5.0% by the year 2000 and remains at about the same level until this day. The resident population in the part of the metropolitan area belonging to Leningrad Region has increased to some extent.

Similar changes driven by social, economic and political transformations in Russia, which led to a remarkable decline in income of a significant part of the population, a drop in the birth rate and the total population in the country, were observed in the largest cities in Russia (Nizhniy Novgorod, Novosibirsk, Yekaterinburg), except for Moscow, where the population generally grew. A small increase in recent years was also registered in Leningrad and Moscow Regions. In all cases, the population growth is largely driven by immigration. About one half of immigrants to St.Petersburg are from the North-West Federal District, and the others mainly come from CIS countries, usually for the purpose of employment. During four years (from 2004 to 2007), 184.8 thousand migrants came to St. Petersburg and 119.8 thousand migrants left the city¹. The temporary population of St. Petersburg (staying in the city for up to six months) is about 180 thousand people in winter and about 340 thousand people in summer². According to expert estimates, these include people who stay in city illegally: from 60 to 150 thousand people³, with the maximum being reached in the summer time.

Construction

The amount of construction is an important indicator of the urban area development. It should be noted that in general, residential construction has grown substantially in St. Petersburg in the recent years. Whereas in the period between 1987 and 2001, the average volume of residential construction was about 1.15 million square meters per year, in the next decade it was 2.3 million square meters, i.e. twice as much, regardless of a slight decline after the 2008 downturn. Housing provision per capita in St. Petersburg is 1.5 - 2.0 times as less as in metropolitan cities in Western countries; however, the volume of residential space put into operation per resident is somewhat higher here than in some of these cities⁴.

By 2008, 49.3% of residential spaces in St.Petersburg were in good condition (wear of below 20%); 43.7% were in satisfactory condition (21-40% wear); 6.5 % were in non-satisfactory condition (41-60% wear); and 0.5% were in dilapidated condition. Almost one half of the residential stock requires major repairs or replacement (given the low quality of the stock). Until recently, financing of maintenance lagged behind the levels required by regulations and standards for technical operation⁵ and the rate of wear of the residential stock gradually increased.

¹ Data of the Information and Analysis Center of the Committee for Informatization and Communication of St.Petersburg (<http://gov.spb.ru/Files/file/migratsiya.ppt#1>, consulted on 30.08.2011).

² The General Plan of St. Petersburg. Summary Volume. 2004. p.68.

³ <http://policy-tracc.gmu.edu/resources/publications/tiuriu01.pdf> (consulted on 30.08.2011).

⁴ <http://www.bis.org/ifc/publ/ifcb31j.pdf> (consulted on 30.08.2011).

http://www.cesifo-group.de/portal/page/portal/ifoContent/N/about/aboutifo/IFOJAHRESBERICHT/ifo_Jahresbericht_2007/JB_2007.pdf (consulted on 30.08.2011).

⁵ http://service.in.spb.ru/files/avto_rigenko.doc (consulted on 30.08.2011).

The rates of growth for various types of buildings after 1999 (unfortunately, we do not have any data on non-residential stock in previous years) are given in Table 1.

Table 1. Building stock in St.Petersburg in 1999 and 2009⁶

Purpose of use	Total area (thousand sq. m)		Growth in 10 years (%)
	1999	2009	
Commercial	3 210.0	7,061.0	120.0
Catering	836.0	921.7	10.2
Industrial	6,516.0	24,523.3	276.0
Warehousing	3,607.0	7,127.2	97.6
Institutions	6,062.0	11,794.1	94.6
Academic and research	3,324.0	4,281.0	28.7
Other	20,988.0	29,398.90	40.1
Total non-residential stock	44,544	85,107.20	91.1
Residential stock	92,400	110,264	19.3

The Table shows that in the past decade, the non-residential stock, especially industrial spaces, generally increased at a higher rate than the residential stock. The technical condition of non-residential spaces in St.Petersburg is close to that of the residential stock. 42% of the non-residential stock is in good condition (wear of up to 20%); 44% is in satisfactory condition (21-40% wear); 13% is in non-satisfactory condition (41-60% wear) and 1.0% is in dilapidated condition⁷.

Spatial Allocation of Population and Work Places Densities

An important characteristic of agglomerations is the location of residential sites, which is best described by the average population density depending on the distance to the centers of agglomerations. The configuration of the population density in many respects influences the accessibility of the centers, the potential of growth of agglomerations, the intensity of their external relations and, hence, the potential for participation in the economy of the surrounding areas. Changes in the location of residential sites within the limits of the CBD and concentric zones in the period between 1987 and 2010 are shown in Table 2 below.

The Table shows that over the past 23 years, the population density decreased nearly in all zones (except for zone 5, which represents parts of the metropolitan area belonging to Leningrad Region). This is due to a 4.4% decline in the total population and an increase in the average housing provision. The central zones 1 and 2 saw the largest decline (45-47%) due to the intensive development of service functions at the expense of housing.

⁶ <http://www.pmc-ocenka.ru/docs/analit/rkn.pdf> and http://www.nsp.ru/files/table/2009/564_14.html (consulted on 30.08.2011).

⁷ <http://www.tehnoprogress.ru/lenta/news22381.html> (consulted on 30.08.2011).

Table 2. Areas, population and population density within and outside of St.Petersburg metropolitan area in 1987 and 2010⁸

Zone No.	Zone in question	Area (sq. km)	Population (thousand people)		Population density (pers./sq. km)	
		1987-2010	1987	2010	1987	2010
1	<i>Central business district (CBD)</i>	7.83	184.30	126.7	23,537	16,181
1 and 2	<i>Core of the city center</i>	24.20	589.0	401.05	24,339	16,572
2	Core of the city center (CC) excluding zone 1	16.37	404.7	27 4.35	24 727	16,763
1-3	<i>Continuous built-up urban areas</i>	423.8	4,310.6	3,904.5	10,170	9,213
3	Continuous built-up urban areas excluding zones 1 and 2	399.6	3,721.6	3,503.42	9,312.2	8,766
1-4	<i>St.Petersburg within the administrative boundaries (excluding the water area of the Finnish Gulf)</i>	1,437	5,032	4,520.0	3,501	3,145
4	St.Petersburg within the administrative boundaries (excluding the water area of the Finnish Gulf and zones 1-3)	1,013	721.7	615.52	712.2	607
5	<i>Metropolitan area as a whole</i>	8,490	5,483.4	5,240.0	646	617
6	50 km wide belt adjacent to the boundaries of the metropolitan area	20,010	326.5	334.0	16.3	17,0
7	Other areas belonging to Leningrad Region	47,298	731.057	722.911	15.5	15,0

The data suggest that the major part of residential construction in the past two decades was carried out outside the historic districts and old industrial belt.

In 2010, the population density in the 50-kilometer wide belt adjacent to the metropolitan area was 31 times lower than in the metropolitan area. In districts of Leningrad Region (where the population density is 2.3 times higher than in the country) around the city the population density is almost 35.5 times lower than in St.Petersburg metropolitan area. St.Petersburg and its entire metropolitan area are surrounded by very sparsely populated areas, as opposed to the majority of similar cities in developed countries (except for Australia and Canada). This causes a low rate of commuting trips from the surrounding areas (and therefore, in the labor market), and affects the cost of freight trips and the growth prospects of the agglomeration. This special geographical location of one of the largest metropolitan areas in Europe is not only due to relatively short history of the city which emerged in the poorly developed area thanks to high concentration of national efforts in building a new capital, but also typical of the entire sparsely populated country. Variations in the population density between capitals of the majority of the constituent entities of the federation and other areas are very high: 46 times between Kazan and Tatarstan, 76 times between Yekaterinburg and the other

⁸ Calculation by PERSPEKTIVA Urban Development Simulation Center using the data of GUP GUION SPb.

districts of Sverdlovsk Region, 100 times between Nizhniy Novgorod and Nizhniy Novgorod Region, and 400 times between Novosibirsk and Novosibirsk Region.

An equally important characteristic of area planning is the distribution of population densities and places of employment within the limits of metropolitan areas and cities. Studies of the World Bank expert A. Berto conducted in the early 1990s convincingly show that the current real estate market in large cities determines a typical pattern of the drop in population density from the center to the periphery of the city, which is not typical of cities in the countries where the administrative economy existed for a long period of time. In the context of the land market, the distribution of density of residents reflects high attractiveness of the center (the area of high concentration of services, jobs, the beginning and end of many traffic trips) and high cost of land in the center, which encourages investors to increase the density of building⁹.

The density of employed persons within the administrative boundaries of St. Petersburg increased in the city as a whole, especially in central areas, and decreased in suburbs from 1997 to 1999, whereupon it became stable. In general, the distribution of densities of residential and non-residential stocks by agglomeration zone changed insignificantly in the past decade.

In 1979–2010, residential development mainly took place within the residential zone (with the main sites in Primorsky District, the Northern Valley and the Baltic Pearl).

A notable increase in the density of residential and non-residential stock at a distance of about 23 to 27 km from the center of the metropolitan area reflects the intensity of construction in the area adjacent to the boundaries between the city and the region, including the Ring Road (Kudrovo, Bugry, Yukki, Vsevolozhsk, projects New Izhora, Slavyanka, etc.), where new residential construction is mainly represented by low cost dwellings in apartment buildings and to a lower degree by cottages. Building in the region is popular due to availability of vacant (in particular former agricultural) lands and relatively low cost of land.

However, in the areas bordering with St. Petersburg, residential construction by far outstrips the development of utilities, such as water supply, sewerage, power supply (the affected localities include Novoye Devyatkinno, Murino, Bugry, Yukki, Yanino-1, Suoranda, Koltushi, etc.). Social infrastructure is also far behind. According to the head of administration of Vsevolozhsk District, in the next ten years, the district will face a shortage of at least 14 thousand places in children's institutions; even higher shortage is expected in schools.

Let us also briefly discuss the change in the population densities in Leningrad Region between 1975 and 2009: the population density increased to some extent within the belt adjacent to the administrative boundaries of St. Petersburg, and decreased in a few remote municipalities in Vyborg, Kirishi, Tosno and Luga Districts.

As indicated in the 2005 General Plan of St.Petersburg, the main shortcoming of the city's spatial organization is distribution of industry: too many industrial areas in the central districts; a large industrial belt between the center and the major part of residential sites; many industrial sites in coastal areas which are most valuable for residential and public facilities.

⁹ http://alain-bertraud.com/images/Note_on_Prague1a.pdf (consulted on 01.09.2011)

Industrial and other non-residential facilities occupy 41% (2.4 ha) of the total area in the historic districts of St. Petersburg (5.8 ha), with more than 200 enterprises (accounting for about 40% of the total area) being idle or leased as real properties. According to the opinion of Becar Commercial Property SPb, in the Soviet times, the total area of the city occupied by industrial zones achieved 20 percent of the built-up areas. Today, the percentage of operating industrial enterprises in industrial zones has decreased by almost one half, and the remaining space is occupied by offices or warehouses. The company expects that 65-70% of industrial enterprises will sooner or later be removed from the city center¹⁰.

Developers of St. Petersburg believe that the old industrial areas around the downtown of St. Petersburg cannot be transformed in the foreseeable future without active support from authorities. The role of the government is not necessarily limited to direct financing. It is equally important to provide an opportunity to privatize lands, mitigate legal risks, offer discounted prices for new sites to accommodate the production facilities, etc. It would be justified to establish a "strategic scale" for land tax and lease to reflect the rates of their increase over a certain period of time sufficient to prepare for the relocation.

Over the past decades, significant efforts in spatial development have been made with respect to commercial and office facilities in St. Petersburg. Their total number increased many times. New large shopping malls and shopping and entertainment centers are located in the major areas of urban planning and at entrances to the city, and large office centers are mainly found in the periphery of the historic central districts.

In recent years alone, several large industrial facilities (automotive assembly plants of Ford, Toyota and Hyundai, an automotive components plant, Astros Logistics Center) and a few large shopping centers were built, and a lot of small retail and service enterprises appeared, in the part of the metropolitan area belonging to Leningrad Region.

According to the available data for 2004 which were used in the 2005 General Plan of St. Petersburg, jobs in the sectors of industry, construction, transport and communications dominated in all enlarged environmental districts of the city, except for the core of the city center (CC).

Commercial and business activities dominated in the "core of the city center". Activities in management, science and staff training (which employ 11% of employees of the city as a whole) account for 16% of jobs in the CC. If workers of culture (libraries, museums) are taken into account, the concentration of the so called "quaternary activity" (technically related to direct human contacts) will be somewhat higher. Higher concentration of this activity in the center of urban areas is in line with the world trends¹¹.

Open Spaces and Green Areas

The number and availability of green areas and water bodies are important characteristics of urban areas. At the time of development of the City's General Plan, the availability of all categories of green spaces within the administrative boundaries of St. Petersburg was 64.0 sq. m per person, including 24.0 sq. m per inhabitant in public areas. According to data available for comparison with other metropolitan cities, in 2004, the total number of such areas was satisfactory, mainly due to rare

¹⁰ <http://www.cre.ru/journalnews/1280/>

¹¹ Meier, R. 1962 A Communication Theory of Urban Growth. Cambridge: MIT Press.

characteristics of the administrative boundaries of the city which include very large suburban areas in Kurortny and Pushkin Districts. Moreover, the area of water bodies is appropriate, too.

Although the reduction of green areas in recent decades has been noted by active public organizations¹², available statistics are unfortunately very limited. The Committee for Nature Management, Environmental Protection and Ecological Safety has published the following estimate: as of January 1, 2009, there are 1,925 public green sites in St. Petersburg, including 215 parkways (1,003.9 ha), 7 embankments (6.4 ha), 59 parks (3,193.8 ha), 160 gardens (658.9 ha), 689 mini-parks (1027.7 ha), 787 green streets (1,207.2 ha) and 8 other green sites (140.8 ha)¹³. In total, the size of public green areas per person is 15.7 sq. m, which is 35 percent less than in 2004. If the estimates for both dates are correct, then the relationship between them looks really threatening. According to our rough estimate, there are only about 10.0 sq. m of public green areas per person within the built-up areas of the city.

The distribution of green spaces within built-up areas of St. Petersburg is very uneven. The central districts have the lowest availability of green spaces, which is on the average 5.0 sq. m per person (except for Petrogradsky District which accommodates the largest municipal parks). The percentage of public green areas in a number of residential areas adjacent to the industrial belt, which were mainly built up after the 1960s, is not high either. The criterion adopted in several European countries that a park of at least one hectare should be available within a 15-minute walk from home is by far not always met. In other areas of the agglomeration, the percentage and availability of green areas are much higher than within the city limits. It is more than 100 sq. m per person in Kurortny, Petrodvorets, Pushkin Districts, and 61 sq. m per person in Lomonosov District.

Urban Transport

As follows from Table 3, the transport situation in St.Petersburg is quite difficult and has been obviously getting worse over the past decades. Negative changes in this area are due to a numerous reasons. An important contribution was made by an increase in the average distance of commuting traffic, primarily caused by a decline in the population density (see Table 2 above): from 10.2 km in 1985 to 17.0 in 2010. Another reason is rapid motorization (in which Russia lagged behind other countries). The peak of motorization was reached in the 1990s and its rates are significantly faster

Table 3. Main changes in the transport situation in St.Petersburg

Indicator	1975	1980	1985	1990	1995	2000	2005	2010
Total trips (per person per year)	650	675	705	735	695	695	710	750
Percentage of trips on public transport (%)	97.0	96.0	94.0	92.0	88.0	83.0	77.0	69.0
Percentage of trips on private transport (%)	3.0	4.0	6.0	8.0	12.0	17.0	23.0	31.0

¹²

http://www.google.ru/url?q=http://www.dp.ru/a/2010/07/01/Peterburg_lishajut_parkov_i/comments/3&sa=U&ei=0QX_TfghHYiBtAa78KDwDQ&ved=0CBAQFjABOBQ&usg=AFQjCNEA_hkfgi-soEDbbBo-JTONx-H_Rw (consulted on 01.09.2011).

¹³ <http://www.infoeco.ru/index.php?id=23> (consulted on 01.09.2011).

Average one-way commuting trip duration (min)	43.0	44.0	48	48.0	48.0	49.0	52	56
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than the development of road networks, garages and parking facilities¹⁴. The third important reason is a decline in the quality of public transport: reduction of lines and rolling stock of land public transport initiated in the 1990s, and consequently, the reduced speed of communications. The sharp slowdown of construction of underground lines from 1999 onwards has also contributed negatively to the problem.

Transport projects completed in the period between 1985 and 2010 include: the Ring Road (KAD) and the southern part of the Western High Speed Diameter (ZSD) including road approaches and crossings; new bridges (Bolshoy Obukhovskiy, Lazarevskiy); Mitrofanievskoye highway providing a better connection between the city center and southern districts; a few tunnels, road junctions and pedestrian crossings; five intercept parking lots near metro stations (two more are being designed); removal of tram tracks in a large number of streets, especially in the center, to make room for cars. However, the transport situation in the city remains difficult.

Environment

Like other urban areas, St.Petersburg metropolitan area creates serious air pollution problems, mainly from two sources: industrial facilities and motor transport. Table 4 shows the overall growth of pollution in the period between 1994 and 2006 (43%) and gradual reduction of emissions by industrial facilities (two times) due to shutdown of some enterprises, and growth of automotive emissions over the same period (68%).

Regardless of programs for air protection implemented by the government, the current condition of the air basin in St. Petersburg is rated as unsatisfactory, which is primarily due to the transport situation in the city. In 2007, the maximum allowable concentrations for a number of pollutants were exceeded by 2 or 3 times. At the same time, a tenfold excess was registered in individual districts of the city¹⁵.

Table 4. Ratio between gross air emissions and emissions from mobile pollution sources in St.Petersburg in 1994-2006

Year	Total emissions (hundred thousand tons)	Emissions from fixed sources	Automotive emissions	Percentage of automotive emissions (%)
1994	199.3	104	95.3	48%
1995	272.8	77.9	194.9	71%
1996	306.4	70.8	203.7	66%

¹⁴ <http://www.apsystems.ru/parkingi-na-vode-spb.html> (consulted on 01.09.2011).

¹⁵ <http://www.ecounion.ru/ru/site.php?&blockType=253> (consulted on 01.09.2011).

1997	279.2	68.1	238.3	85%
1998	279.2	66.9	212.3	76%
1999	245,0	63.6	181.4	74%
2000	244.6	59.2	185.4	76%
2001	231,0	57.8	173.2	75%
2002	250.8	54.2	196.6	78%
2003	283.9	60.2	223.7	79%
2004	270.4	57.0	213.4	79%
2005	275.6	52.5	223.1	81%
2006	284.6	52.8	231.8	81%

St.Petersburg is one of the noisiest metropolitan cities in the world, with the average noise level being 60 dB (Paris: 61 dB, London: 56.5 dB and Moscow: 67.5 dB). St. Petersburg and Leningrad Region are affected by the problems of the water basin. These include eutrophication of the Neva Bay which impairs the water quality and disturbs biocenoses, and pollution of the main source of potable water in the city and the region, the Ladoga Lake. In Leningrad Region, 18.5 percent of decentralized water supply sources (including wells, artesian wells, springs, etc.) do not meet the sanitary and chemical standards, and 22.7% of these sources fail to conform to sanitary regulations in microbiological indicators.

Thanks to the decline in industrial production from the 1990s onwards and shutdown of many livestock farms, the pollution of many water bodies in Leningrad Region has decreased to some extent¹⁶.

A large amount of land reclamation in the water area of the Neva Bay was, and still remains, a significant environmental problem.

At the same time, in June 2010, the 2005 General Plan was amended to reclaim 377 hectares of land on the northern coast of the Gulf to build about 3.5 million sq. m of space, including 2.0 million sq. m of residential space. These plans caused serious concerns among residents of the coastal areas due to loss of access to recreational areas, fears of losing their customary dwellings, and general environmental concerns¹⁷. Objections of residents are supported by environmental specialists who require a comprehensive analysis of possible consequences of land reclamation¹⁸.

An important source of pollution is industrial and municipal solid wastes (MSW). Currently, the total amount of such wastes in St. Petersburg is estimated at about one ton per person per year, and this

¹⁶ <http://allnw.ru/news/34582> (consulted on 01.09.2011).

¹⁷ <http://forum.ramboff.ru/lofiversion/index.php/t14315.html> (consulted on 01.09.2011).

¹⁸ <http://www.baltinfo.ru/2010/01/21/Finskii-zaliv-riskuet-stat-mertvoi-zonoi--125966> (consulted on 20.04.2011)

number is constantly growing, like elsewhere in the world. International practices show that the most effective way to control the accumulation and decay of these wastes is recycling, including recycling to produce useful items, such as recycled metals, plastics, glass, fertilizers and electric power. St.Petersburg is served by three waste recycling plants; nevertheless, some serious MSW problems remain unresolved. One of them is associated with a significant amount of unorganized dumps, especially in suburban areas; the second problem is lack of an efficient waste separation system at waste generation sites. These problems are solved much more successfully in many EU countries by creating a secondary raw material market, providing financial incentives to carriers and by promoting waste separation by city residents themselves¹⁹.

Factors and Problems of St Petersburg Spatial Development

The large number and diversity of obstacles to the full development of the metropolitan area in question make us admit that the existing problems are generally caused by lack of coordination between all actors involved in the development of the urban area. This is largely due to a long period of centralized urban planning which was based on "top-down" administrative regulation rather than on laws (which did not exist in this area).

Specific characteristics of the current situation are as follows:

- very short experience in implementing urban planning and land legislation and related legal regulations of all levels (including laws, general plans, land use and development regulations, regional urban planning standards) that are subject to constant criticism and regular change;
- a previously established urban road network, which is designed for the absolute dominance of public transport rather than for dynamic motorization of the population;
- significant wear and tear of the transport and engineering infrastructure by the end of the 20th century, which was aggravated by a serious decline in financing of the municipal economy during the period of perestroika and beginning of market-oriented economic reforms;
- extensive industrial areas established as early as in the pre-Soviet times being adjacent to the water area and central districts;
- land use patterns developed in the Soviet times, which are poorly adapted to the demarcation of land plots under individual buildings;
- a large amount of low quality and obsolete residential stock;
- a large number of cultural heritage sites that are subject to protection;
- contradictions between the goals (and public interests) in the preservation of historic appearance of the city and green areas and in the improvement of transport accessibility, which in particular can be achieved by increasing the density of construction (which is relatively low in St.Petersburg);
- lack of established practices for effective interactions between authorized representatives of the central city and its surrounding areas;

¹⁹ <http://dis00.narod.ru/halyava/4k/refothodi.html> (consulted on 01.09.2011).

- negative correlation between the average household income and cost of housing, along with a significant difference in incomes between different population groups (this figure is several times higher in Russia than in developed countries);
- a limited budget of the central city as compared with the majority of metropolitan cities in the world;
- low efficiency of budget expenditures which is typical of today's Russia.

In order to clarify the key issues of spatial development of St.Petersburg metropolitan area and their causes, in November 2011, the Scientific Laboratory of Urban Studies of St. Petersburg Higher School of Economics conducted a survey (on the basis of a structured expert interview and using a grant of the School's Center for Fundamental Research).

The main objectives of the survey were as follows:

- clarify basic characteristics of St.Petersburg metropolitan area;
- identify the key issues of spatial development of St.Petersburg metropolitan area;
- identify factors/reasons that affect the issues of spatial development of St.Petersburg metropolitan area.

The target sample consisted of experts and specialists in the field of spatial development and agglomeration processes, representing different areas of activity: regional management, creation and development of utilities and transport infrastructure, spatial planning and design, research in spatial economics. The controlled parameter: approximately equal representation of experts in each of these areas in order to obtain comprehensive and balanced data about the object and subject studied.

The sample set included 16 experts representing:

regional government bodies – 5 persons;

utilities and transport infrastructure – 3 persons;

spatial planning and design – 4 persons;

research in spatial economics – 4 persons.

All expert respondents cited serious problems that constrain the spatial development of St.Petersburg metropolitan area. Scores given by them to the proposed list of existing problems on a 5-point scale (5 - an important issue, 1 – a minor issue) were used to determine relative importance of each of the problems and build a ranked list (Table 3).

Table 3 — Key issues of spatial development of St.Petersburg metropolitan area

No.	Issue	Average score
1	Traffic trips	4.8
2	Old industrial areas in the central districts of St.Petersburg	3.9

3	Reduction of green areas and public spaces	3.8
4	Environmental status	3.8
5	Development of a peripheral belt of the agglomeration	3.7
6	Architectural and design solutions for the center and periphery	3.4

The second part of the survey was dedicated to factors affecting the areas of concern in spatial development of the metropolitan area. Analysis of the expert opinions enables us to conclude that institutional factors play a prevailing role. Worth special attention among them are "universal" factors that have a significant impact on several areas of concern. According to expert estimates, these factors include mechanisms for cooperation between the neighboring constituent entities of the federation (St.Petersburg and Leningrad Region) whose territories are part of the metropolitan area, and the system of spatial planning and urban planning for land use and development management. Also worth noting is the current state quasi-monopoly on land with inadequate specification of rights and domination of lands that are not allocated between different levels of government.

Conclusions

Excessive regulation in the absence of a clear strategy for spatial development of the metropolitan area, structural mismatch between supply of land for development and existing demand, lack of coordination in plans for the development of the metropolitan area between the city and the region, and other institutional factors contribute significantly to the persistence and aggravation of problems of spatial development of St.Petersburg: the wear rate of infrastructure in the city center remains high, the old industrial belt which grew in the Soviet times near the center still exists, the metropolitan area continues to expand to the region, transport problems become more acute, green areas and the number of trees in the city center decrease, and the quality of the urban environment and development goes down. Although the efficiency of land use improved to some extent (an increase in the number and diversity of service and trade businesses, an increase in the density of residential and non-residential construction in some districts), the current status of land ownership and development control prevents St.Petersburg from completing successful post-industrial transformation and using effective spatial development strategies to create agglomeration effects comparable with those found in large and most competitive metropolitan cities (for example, in the EU and the U.S.).

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