

Transformation of industrial areas of St. Petersburg embankments

Most megalopolises of the world grew rapidly in the XIX-XX centuries around industrial enterprises and developed due to them, so the core of cities and river banks were filled with plants and rails. These enterprises of the second and third technological order in Europe which used water, coal and steam for work were changed by post-industrial development and service economy one by one.

The 1970`s marked the beginning of the transition period which consisted in the reuse of former industrial territories. This was preconditioned by the new industrial revolution and the transfer to new economy.

St. Petersburg is one of the cities influenced by industrial development. As a legacy from the industrial era St Petersburg received 19,000 hectares (14% of the total area of the city) of the territory of former factories and factories that form a "grey belt" around the historical center of the city. The territory of "grey belt" is environmentally and socially disbalanced. Potentially St. Petersburg can get benefit from it.

The aim of the research is to define the dynamics of the functional transition of the industrial areas of St. Petersburg to post-industrial mode.

Research methods: the diachronic method was used to study the functional transition of the industrial areas from industrial to postindustrial type.

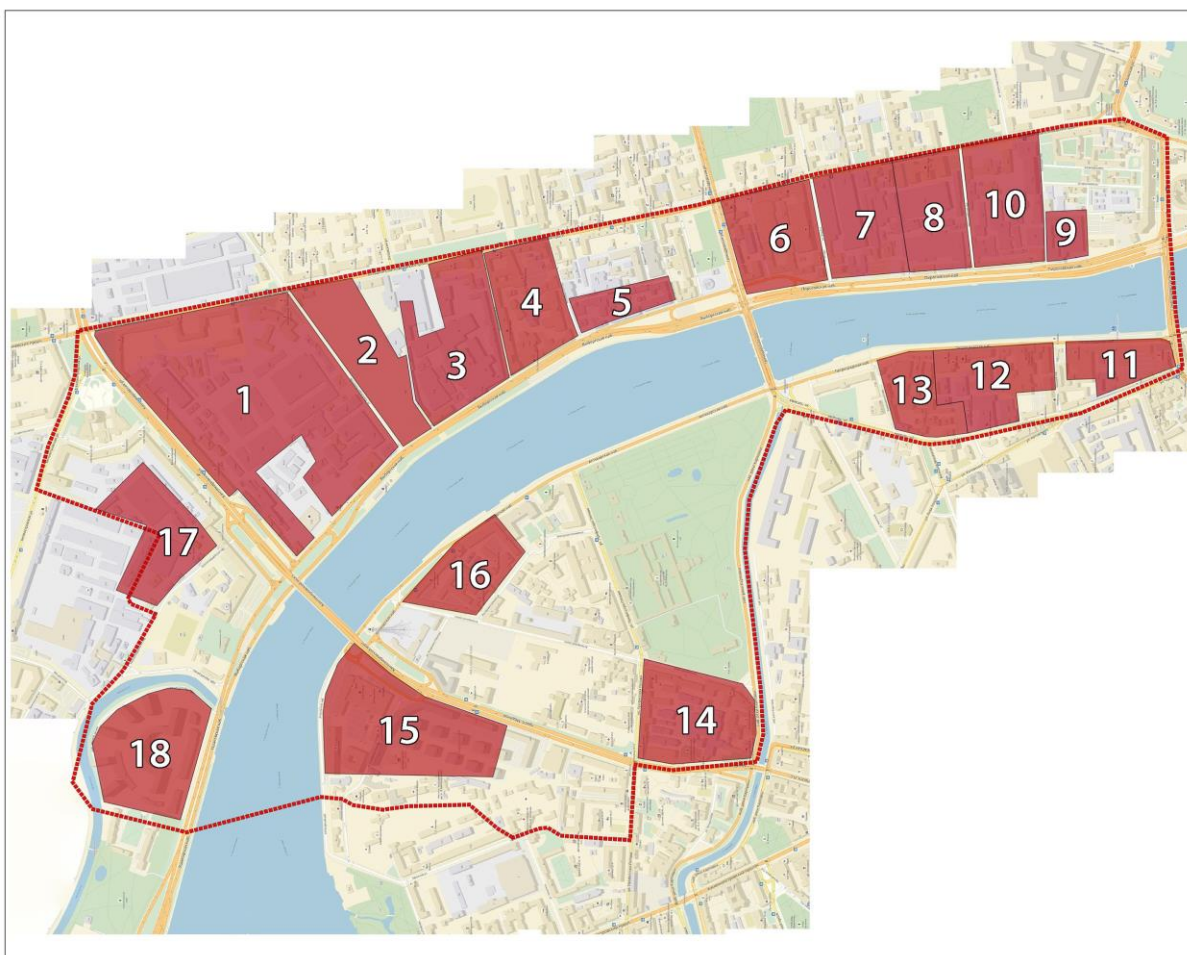
The following dates were taken to track the dynamics of changes in the functional development of territories: 1988, 1998, 2002, 2006, 2017

Each year determinate the functional usage of the territory as well as the number and type of firms that were located during this period.

The "North embankment", an area of 331 hectares was chosen for the research because it grasps the existing "gray zone" on the one hand and it's located close to the historical city center on the other hand. Historically, this territory was industrial: since the end of the 19th century it was almost completely occupied by plants and factories (see table 1).

During Soviet period plants were nationalized and changed their names and sometimes specialization, but continued to exist on this territory. Most of the plants ceased to exist in the second half of the 20th century, some moved their production facilities to the periphery of the city.

At the moment, only 6 factories have remained at their historical location, but now they occupy only a few buildings from the original areas.



Map 1. Factories in the “North embankment” area in the twentieth century.

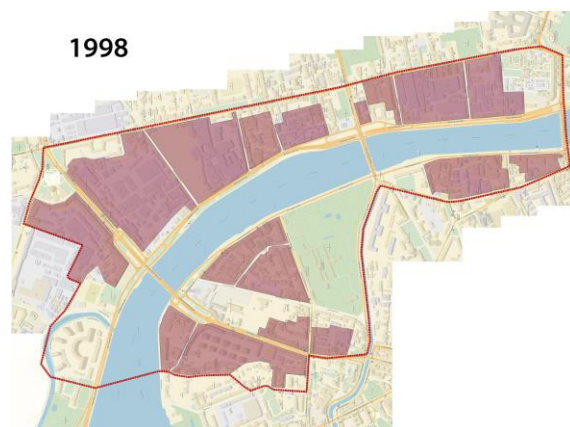
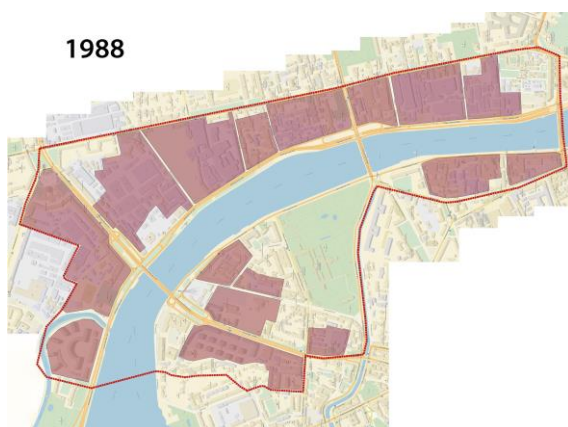
Number of territory on the map	Title	Dates	Specialization	Comment
1	Nikol'sk paper mill manufactory of the joint-stock company "Voronin, Lutesh and Cheshire" / Factory Red Lighthouse	1888-1997	textile enterprise	
2	Mechanical plant "New Lessner" / Machine-building plant	1898-1976	mechanical engineering	
3	Cotton Manufactory “Nevka”/Plant Red String	1849-...	textile enterprise	Still exists
4	Plant "LM Erickson and Co" /	1897-2012		

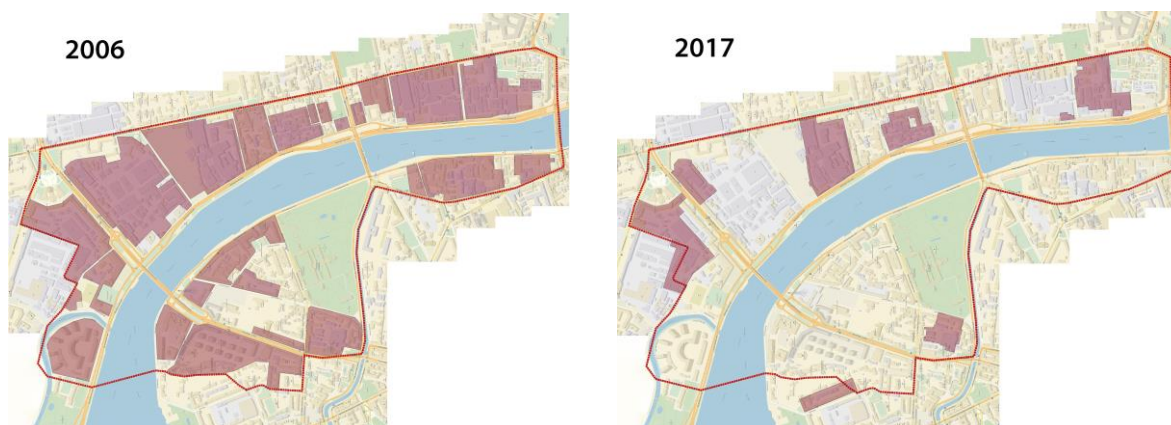
	Plant "Red Dawn"			
5	Plant Komsomolskaya Pravda / Plant for processing of plastics. Komsomolskaya Pravda	1909-...	polymer cluster	Still exists
6	Sampson Manufacture / Spinning and Weaving Factory "Oktyabrskaya"	1836-1993	weaving factory	
7	Factory "Ludwig Nobel" / Factory "Russian Diesel"	1862-1999	engine building, production of boilers, machine tools, pumps / diesel production	
8	Petrograd jute manufactory of the Association of flax-fiber plants and manufactories "Lebedev" / Factory Worker / factory "Kanat"	1897-...	weaving factory / rope manufacture	Still exists, but moved from the original location
8	Plant "Mezon"	1951-...	manufacture of capacitors, batteries and batteries	Still exists
9,10	Sugar plant Carra / Mechanical iron foundry "G. A. Lessner »/ Research Institute-400 / Machine-Building Plant" Engine "/ Marine underwater weapons-Gidropribor	1850-1921 1921-...	sugar production / defense industry	Plant "Gidropribor" is still exists
11	Factory "Vibrator"	1929-1998-...	instrument engineering (measuring instruments)	Still exists, but moved from the original location
12	Complex of buildings of the Paper-mill "James Bek" / Enterprise "Dalsvyaz"	1884-1910 1997-2006	/ defense industry	the enterprise continues to work, but since 2006 has moved to Pskov
13	Tulle Factory / Open Society "Гардино-Lace Company"	1850-...	production of tulle and curtain cloth	
14	Petrograd Machine-Building Plant / Plant them. Geltsa / OJSC LenPoligrafMash	1896-2007-...	mechanical engineering	Still exists, but moved from the original location

15	"Plant of electromechanical structures" / Plant Electric	1896-1997 1997-...	machine tools and tool industry	Still exists, but moved from the original location
16	Factory Krasnogvardeets / JSC "Krasnogvardeets"	1843-2001- ...	manufacture of medical equipment	Still exists, but moved from the original location
17	Plant Struk / Technopark Ilyich / St. Petersburg Precision Machine-Tool Plant (Ilyich Machine-Building Plant)	1878-...	tool release from electromechanical machine tools	Still exists
18	Aviation Department of JSC Russian-Baltic Carriage Plant / North Plant	1912-2006 (?)	heavy engineering (production of wagons, agricultural machinery) / car production / aircraft construction	in 2006 the plot was sold

Table 1.

Based on historical maps and the Land Use and Development Rules (for 2017), territories were noted as industrial.





Industrial areas at different time periods.

Year	Area of industrial territories, hectares
1988	145,53
1998	152,92
2006	153,76
2017	35,60

Table 2.

Functional changes of the territory, the dynamics of the number and typology of firms located on this territory. The results are shown in the table below.

	1988	1998	2002	2006	2017
B2B	-	29	51	255	848
B2B, B2C	-	43	51	59	260
B2C	15	37	55	194	605
Industrial companies	No data available	No data available	No data available	218	126

Table 3. The number of private firms in the study area in different years.

Conclusions:

- During this period till 2006 industrial areas changed their boundaries, but remained approximately equal in total area. Significant reduction of industrial areas occurred only in 2017
- Most industries in the area either closed or moved to the outskirts of the city
- The former industrial area is mainly used for business and residence
- Though the area transformation started from B2C companies, B2B companies are prevailing in the area now
- The industrial output of the area has reduced, however the complete deindustrialization has not taken place.