

1. Geographic location and demographic situation

The city of Arkhangelsk where our meeting is taking place is the administrative center of the Arkhangelsk Oblast. The Arkhangelsk Oblast is located in the north-west of Russia (picture 1) and is washed by the water of three Arctic seas: the White Sea, the Barents Sea and the Kara Sea. The White Sea within the territory of the Arkhangelsk Oblast includes the Onega Bay, the Dvina Bay, and the Mezen Bay with the basins of main surface water bodies – the Northern Dvina, the Onega, and the Mezen rivers.



Picture 1. Position of the Arkhangelsk Oblast on the map of Russia

Favorable location and proximity to the White Sea contributed to establishment of Arkhangelsk – the first in Russia sea harbor and a center for trade with the Western European states.

Arkhangelsk is a large historical, industrial, scientific and cultural center in the North-West of Russia. The following industrial sectors are concentrated here: timber, wood chemical, pulp-and-paper, fishing and fish processing, mechanical engineering.

The city of Arkhangelsk is located on the banks of the Northern Dvina River and on the islands of its estuary (picture 2). The city is divided into 8 administrative districts. Total area of the city is 294.4 km², the number of population as for January 1, 2009 is 348.3 thousand people.

The construction of Arkhangelsk was mainly based on the location of large industrial and transportation facilities. As a result the city is stretched from the North to the South for more than 30 km, and from the West to the East – for 20 km. Another challenge for the spatial arrangement of the city is the Northern Dvina River – its channel, arms, and creeks divide the city almost in the middle and make the development of transportation and communal infrastructure to a great extent more complicated and expensive.

Most of the population live in the central, most densely built-up part of the city: in the districts Oktyabrskiy, Solombala, Lomonosovskiy, and Majskaya Gorka (thus making approx. 65% of the total city population). Some of the neighborhoods being parts of the city (municipality) are located on the islands and have no on-land connection with the other districts of the city. Lengthiness of the city and the fact that some of its districts are located on the islands pushed construction of local water treatment facilities (in places). The number of population in the districts is given in table 1.



Picture 2. The map of the Arkhangelsk Oblast showing the location of Arkhangelsk city

Table 1: Number of population, area and density

District	Number of population*, thousand people	Ratio to the total number of the city population, %
Arkhangelsk city	348,3	100
Oktyabrskiy district	82,97	23,8
Lomonosovskiy district	69,04	19,8
Solombala district	44,86	12,9
Majskaya Gorka district	35,72	10,3
Varavino-Factoriya district	30,70	8,8
Majmaks district	19,07	5,5
Tsiglomen-Isakogorka district	37,72	10,8
Severniy district	28,22	8,1

The main water resource in the city is the Northern Dvina River. Because of the intensive industrial load and hard hydro meteorological conditions the level of the Northern Dvina River pollution is rather high, although the river is the main water source for the city. It makes drinking water treatment to meet the existing norms and requirements even more complicated. Negative impact on the drinking water quality is produced also by the state of the water supply network, which has been in operation for a long time already and has become worn-out. This leads to incidents and breakdowns, and as a result causes secondary pollution of water treated for drinking purposes. To improve quality of drinking and waste water, to protect water bodies and water resources a project “Improvement of municipal services system in the city of Arkhangelsk” is being implemented by Municipal Enterprise

Vodokanal. The project includes a number of activities at central and local water treatment facilities, water supply and sewage systems, including those on the islands.

Water-supply System in the City of Arkhangelsk

The most challenging problems within municipal housing sector of Arkhangelsk appear in the work of water-and-sewage system. Total length of the water-supply network is 665 km. Out of that number, 155 km are 100% worn-out, 176 km are more than 70% worn-out. Drinking and household water losses in the water-supply system during transmission are about 30%. Every day up to 5 incidences may occur at water-and-sewage facilities of the city. The main drinking water supplier for the population in Arkhangelsk is municipal unitary enterprise Vodokanal, but for two neighborhoods of the city – Isakogorka and Turdeevo – drinking water is supplied in the former case by the Heat and Water Supply Directorate of JSC Northern Railway, and in the latter case by JSC Novodvinsk Pulp-and-paper Mill. Municipal Enterprise Vodokanal does not have sufficient current assets, thus it is not able to provide necessary repair and reconstruction of water-and-sewage network.

Central neighborhoods of the city are supplied with drinking water from central water treatment facilities. Remote areas of the city are supplied with drinking water from local water treatment facilities in places. There are totally 11 local water treatment facilities in places. These facilities used to be owned and managed by industrial companies in the city. In the 90s of the last century they were given to the municipality being in poor condition. Some of the facilities have been upgraded and repaired.

I would like to speak in more details about three water treatment facilities:

- in the neighborhood on the Kego island;
- in the neighborhood around lime brick making factory;
- in the neighborhood around Timber Plant 23.

Water treatment facilities on the Kego island at present are in disrepair. This can be explained by the following factors:

1. They were built in 1934. Sedimentation tanks and filters are made as huge wooden barrels, wooden constructions are greatly worn-out. The building is in a poor condition.
2. In the Soviet times there were plans to connect the neighborhood on the island to the water treatment facilities located in the Tsiglomen district. They even started to lay a bottom pipe (inverted syphon) at that time, but later the works were stopped.

At present the city administration is working on design engineering and later construction of new water treatment facilities.

Water treatment facilities in the neighborhood around lime brick making factory are owned by JSC “Lime Brick Making Factory” and maintained and serviced by Municipal Enterprise Vodokanal under the rental agreement. The building where water treatment facilities are located is in satisfactory condition, the equipment is partly out-of-order. The city administration has made a decision to purchase the facilities and reconstruct them to supply southern districts of the city with drinking water.

Water treatment facilities around Timber Plant 23. In 2008-2009 the facilities were upgraded at the cost of 89 million rubles. Today drinking water coming to the population from these facilities is considered to be the best in the city of Arkhangelsk.

Reference information:

- *Central water treatment facilities (WTF), water intake volume is 55560.0 thousand m³/year;*

- WTF in Tsiglomen, water intake volume is 876.0 thousand m³/year;
- WTF Kirpichniy, water intake volume is 263.0 thousand m³/year;
- WTF Zelenets, water intake volume is 209.0 thousand m³/year;
- WTF Zelyoniy Bor, water intake volume is 101.2 thousand m³/year;
- WTF Timber Plant 23, Portovaya str. 19, water intake volume is 100.0 thousand m³/year;
- WTF MLP, water intake volume is 126.2 thousand m³/year;
- WTF on the Khabarka island, water intake volume is 88.6 thousand m³/year;
- WTF Pervykh Pyatiletok 2200.7 thousand m³/year;
- WTF Lime brick making plant 750.0 thousand m³/year;
- WTF on the Kego island 120.4 thousand m³/year;
- WTF Timber Plant 29, water intake volume is 178.5 thousand m³/year.

3. Development strategy for the city of Arkhangelsk

The Mayor of the city Viktor Pavlenko by his decree № 120 from 20.03.2008 approved of the program "Strategy of social and economic development of the Arkhangelsk city up to 2020" (hereafter referred to as Strategy). The main goals of the Strategy is to identify strategic guidelines for social and economic development of the city of Arkhangelsk, to improve life quality of the townspeople, to create favorable social, economic, environmental and other conditions for their vital activities.

Primary areas in the social and economic policy of the city are given in Table 2 below.

Table 2: Primary areas in the social and economic policy of the city

Economic policy	Objective: to create working places with high salaries.
Social policy	Objective: to fight against poverty and eliminate social disproportions.
Cultural policy	Objective: to preserve historical distinctiveness and cultural traditions.
Educational policy	Objective: to establish educational cluster with services valued in the Barents region. To increase the education level of population.
Health care policy	Objective: to establish medical cluster with services valued in the Barents region.
Youth policy	Objective: to promote pro-active approach to life and patriotism.
Senior people policy	Objective: to make their active life longer.
Spatial policy	Objective: to optimize spatial structure of the city. To abolish and avoid formation of social instability zones.
Town-planning policy	Objective: to ensure opportunities for the city's development.
Accommodation policy	Objective: to improve life quality of the population in terms of ensuring high living standards.
Infrastructure policy	Objective: to create opportunities for the city's development.
Ecological policy	Objective: to make the environmental situation in the city meet the existing norms and requirements.
Development of civil society institutions and	Objective: to intensify participation of civil institutions in the discussion of plans and intentions of the city

Increase of people's social activity	administration and their implementation.
External policy	Objective: to create positive image of the city and strengthen inter-municipal, inter-regional and international cooperation.
Budget policy	Objective: to ensure implementation of the city's development strategy through financing from the local budget.

The objective of the ecological policy carried out in Arkhangelsk is to make the environmental situation in the city meet the existing norms and requirements. The main activities within this policy are the following:

- to try and reduce environmental load from the work of existing enterprises, including communal ones.
- to take into consideration environmental aspect when selecting new investment projects.
- to licence sanitary-protective zones of enterprises.
- to develop people's environmental culture / environmental thinking – both through education and raising awareness starting from pre-school children, and through tightening control over observation of nature-protective requirements.

Implementing this program the administration of Arkhangelsk every year beginning from 2008 provides subsidies to the Municipal Enterprise Vodokanal to perform capital repair of water treatment facilities and networks. According to calculations, by reduction of drinking water consumption in the city by 1% only we can save more than 4 million rubles per year. Correspondingly, after repairing water supply networks drinking water losses will be gradually reduced by 30%, thus saving 120 million roubles.

In April 2010 deputies from the City Council approved investment program for Municipal Unitary Enterprise Vodokanal – “Development of water supply and water discharge systems in Arkhangelsk for 2010-2012”. According to the program 60.9 million rubles will be spent to develop water supply and water discharge systems in the city, taking into account perspectives of future construction. The financial sources for the program should be tariffs for connection to water supply and water discharge systems. Without construction of new networks it is impossible to put into operation any house. The municipality keeps strictly watching over the process of the city's supply network modernization.

In the municipality “Arkhangelsk City” we continue to work on implementation of the Program to improve municipal facilities and services within water supply sector, which is realized under the credit agreement between the European Bank of Reconstruction and Development and Municipal Enterprise Vodokanal. Within this Program Vodokanal is building a ring-shaped water pipe-line, is upgrading disinfection system, and a contract has been signed with a company from Novosibirsk JSC “Sinetik” which delivers and installs SCADA system. It is worth to speak about the system in more details, moreover that last time renovation of the central water treatment facilities was performed in 1983. In this case we also mean automation process at the central water pumping stations. The equipment which is united under the name “SCADA system” has been installed at five facilities of Municipal Enterprise Vodokanal: at the local pumping booster stations in Economia, Solombala, Majmaks, Varavino, and at the central water treatment facilities. Installation works started in spring. As for today, installation process is coming to an end. At other facilities the system is operated in a test mode. By January 2011, according to the experts, SCADA will be working in its full force.

City administration is working hard to solve the tasks how to improve water supply for the townspeople. It means use of own resources and possible options to involve federal money. We do hope that all the efforts to improve water supply system in the city will bring positive and favorable results in the nearest future.