

## ECONOMICS OF NATURAL RESOURCES USE IN «VODOKANAL OF ST.PETERSBURG»

*Felix Karmazinov, General Director  
of State unitary enterprise «Vodokanal of St.Petersburg»  
42, Kavalerghardskaya str., St.Petersburg, 193015, Russia*

The State Unitary Enterprise «Vodokanal of St.Petersburg» is the major user of natural resources in St. Petersburg area and its suburbs. The use of natural resources comprises three nature spheres: water basins (superficial and underground), air, and soils.

«Vodokanal of St.Petersburg» uses water basins for the purposes of its activity by the means of:

1. Exemption of water resources for the drinking water supply of St.Petersburg and suburbs from centralized water supply system. Vodokanal exempts 1218 million m<sup>3</sup>/year mostly from superficial water basins (98%) by 9 water works.

2. Discharge of waste water and pollutants from St. Petersburg sewer system. The total volume of waste water discharged - 1214 m<sup>3</sup>/year; 74,3% of domestic, industrial, superficial and drain waste water is discharged after treatment at 7 waste water treatment plants of the city and 12 waste water treatment plants in suburbs, mostly using the process of biological treatment; 25,7% of effluents are discharged without any treatment into water basins from 248 direct discharge outlets of the city and suburbs.

Besides of that:

- *superficial and drain effluents, mostly untreated, are discharged from 1050 rain water outlets in the city and suburban areas with separated sewerage system;*
- *flush water from water treatment plants, also without treatment, is discharged from 11 direct discharged outlets.*

«Vodokanal of St.Petersburg» has therefore 1337 waste water discharge outlets both in the city and suburbs.

«Vodokanal of St.Petersburg» has 11 sludge deponies on city's lands, including 1 depony on the lands of Leningrad region, which receive 522000 tons of sludge per year. Some 1000 tons of solid domestic and industrial waste per year are brought to the city's and suburban waste deponies.

The Russian environmental law has introduced the principle of payment responsibility for water pollution resulting from effluent discharges, air pollution due to emissions of pollutants, and soil pollution due to waste deponies.

The environmental pollution payment procedures have been set out in the Decree of Russian government of 28.08.92 no. 632.

The total cost of environmental pollution in 1996 amounted to 141,8 billion rubles (99%), and most of the payments are made from profit, including:

- *payments for discharges, emissions, deponies within the set limits;*
- *payments for discharges, emissions, deponies beyond the set limits;*
- *payments for prohibited discharges, emissions, deponies.*

Taking into account that the main cost of pollution beyond the set limit is due to water pollution (88%), let's make a more detailed analysis of this cost. When analyzing the share of different components in the total cost of water pollution one should note that 67% of the total cost is generated by the city's direct discharge outlets, including rain water outlets, the Main waste water pumping station, and the discharge outlet no.2 of Krasnoselskaya WWTP. The Central WWTP generates 22% of the total cost.

Totally 24 kinds of pollutants are discharged into water basins, whereof 14 make 99% of the total cost of pollution beyond the set limit; the main of those 14 pollutants are: suspended solids, oil products, BOD<sub>total</sub>, nitrogen, phosphorous, aluminium, iron, heavy metals (copper, zinc, mercury); phenols.

22% of the cost is due to suspended solids, the second in the row come oil products with 16%.

One should note that the share of domestic effluents from water users who own or manage domestic buildings (50% share of waste water vol.) makes only 26% of the total cost of water pollution.

When comparing the cost of 1995 with the cost of 1994 one should note that the total cost has diminished in 1995 (1991 prices) for 60%, including cost of discharges, emissions and deponies beyond the limit as well as cost of prohibited discharges, emissions and deponies.

The payment of environmental pollution cost is made from the following sources:

1. Payments for discharges, emissions and deponies within the set limits are included into the costs register as "self-cost" and paid from the revenues received (water tariffs) by «Vodokanal of St.Petersburg»;

2. The cost of discharges, emissions and deponies beyond the set limit has to be paid from the profit of «Vodokanal of St.Petersburg»;

Before 01.03.96 «Vodokanal of St.Petersburg» made this payment in form of a fixed percent from the revenue, which was remaining in Vodokanal, and reimbursed from the money received from the water users being economic measures for the violation of waste water intake regulations. These measures were introduced in 1989.

The implementation of these measures in St. Petersburg gave positive results, and namely:

- *a drastical profile change has taken place in planning-, research-, and repair institutions for the development and implementation of effluent-free technologies, advanced treatment schemes, which would allow to close up the effluents into a cycle water supply;*

- *enterprises have not only begun to build effluent-free and cycle technologies, but also implement advanced shallow water technologies.*

As a result the content of "specific" pollutants in the city's total effluents, which get to the city's waste water treatment plants, has considerably decreased.

On 31.12.95 the Decree no. 1310 of Russian government was issued "About the payments for waste water and pollutants discharge into sewer systems of cities", which in turn has since 01.03.96 canceled the former procedure and, at the same time, forced the executing authorities of the Russian Federation to set out a new procedure of payment for discharge of all waste water and pollutants into sewer systems of cities, providing therein economic measures for the damages incurred by water users to the sewer system and the environment.

At the moment a draft decree of St. Petersburg city administration "About the payment for waste water and pollutants discharge into the sewer system of St. Petersburg" provides the approval of the whole package of new regulating documents, the main of which are:

- *"Conditions for the intake of pollutants, generated by water users, into St.Petersburg sewer system";*

- *"Procedures of payment for waste water and pollutants discharge into St.Petersburg sewer system", providing economic measures for waste water and pollutant discharges beyond the limit.*