

Externalities and Local Government Policy as Braking Factors of the Development of Water Supply Systems in the Russian Towns

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1 ABSTRACT

The article deals with the analysis in activity losses of water-supply systems in small and average towns of the Russian Federation, considering preconditions and factors of unproductive expenses. The research is made on the example of the LLC "Uralvodokanal" in Dobryanka in Perm Region – a typical representative of the town of the Russian Federation. Such settlements are characterized by having centralized engineering networks as well as high proportion of housing without modern conveniences. Noted problems are mainly acute in the country towns with the population of 10 - 50 thousand people.

The maintenance of the housing and urban (utility) services (HUS) operability comes first in Russia. There are strong reasons to that:

- high level of depreciation of the housing stock, urban infrastructure and fixed assets of the resource-supplying organizations (RSO);
- levels of HUS costs have dramatically increased, compared to the average wages in the Russian Federation;
- reduction tendencies development in the municipal budgets formation and decrease in opportunities of local governments to solve problems of housing and utility services;
- increase of social tension due to the objective growth of tariffs for housing and urban services.

As it is defined by the theory, negative externality effects appear in the conditions of property rights "washing out" and lack of economic feasibility of the transaction expenses connected with protection of these rights. The typical aspects of resource-supplying organizations (RSO) functioning are: shipping opportunities, law nihilism and management companies "cloning", deliberate bankruptcy of consumers, unauthorized inserts in resource transportation systems, etc. As a result all negative externalities find reflection in the increase of tariffs which leads to the decrease of service quality. Losses from externalities with the limit coefficients for tariffs growth set by federal authorities significantly reduce a share of productive costs. Low efficiency of regulatory base and poor performance of law-enforcement system not directed against unauthorized consumption, result in a steady increase of burden on conscientious consumers. Consequently, it leads to the growth of opportunism, reduction of a conscientious consumers share and inevitable destruction of infrastructure as a whole.

The main proposed directions to resolve this situation are:

- improvement of the regulatory base of housing and urban services;
- defining a measure of territory leaders responsibilities for infrastructure operability and formation of their participation mechanisms in regulation of managing companies and RSO;
- effective formation of infrastructure projects sources of financing in small country towns of the Russian Federation.

2 ABNORMAL EFFICIENCY

LLC "Uralvodokanal" was created in 2003 on the basis of assets of the Perm state district power station for operation of systems of water supply and water disposal of the city of Dobryanka by a group of individuals. The company experienced following problems which were defined as paramount:

- execution of license obligations;
- improvement of provided services quality;
- decrease in expenses for the production activity;
- objects operation reliability increase.

From the moment of foundation of the enterprise all the necessary licensing documents to provide the complex solution of questions of water use, operation of subsoil and waste were received. To date all existing license obligations are strictly fulfilled in terms determined by license conditions. For the purpose of the quality improvement water intake from a surface source (the Tyusevsky reservoir) is almost stopped. 100% of water is taken from restored and newly drilled wells except for winter time. Liquid chlorine is excluded from technological process, contact clarifiers are modernized for the purpose of infectious diseases risks among the city population decrease.

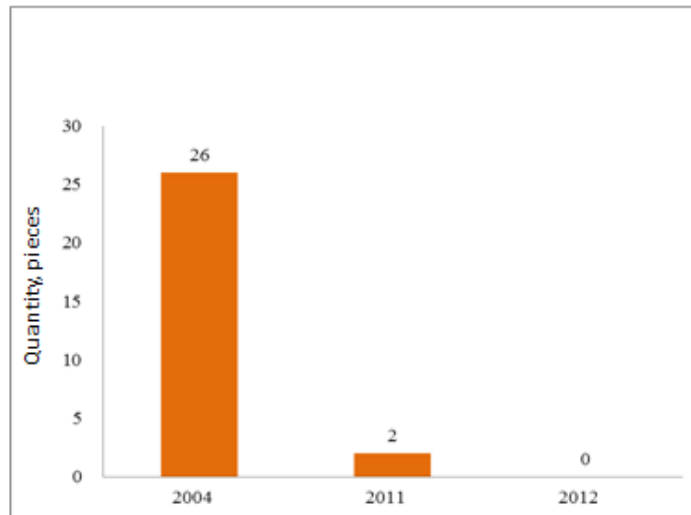


Fig.1 A number of non-standard tests in the water intake points and before distributive network entering

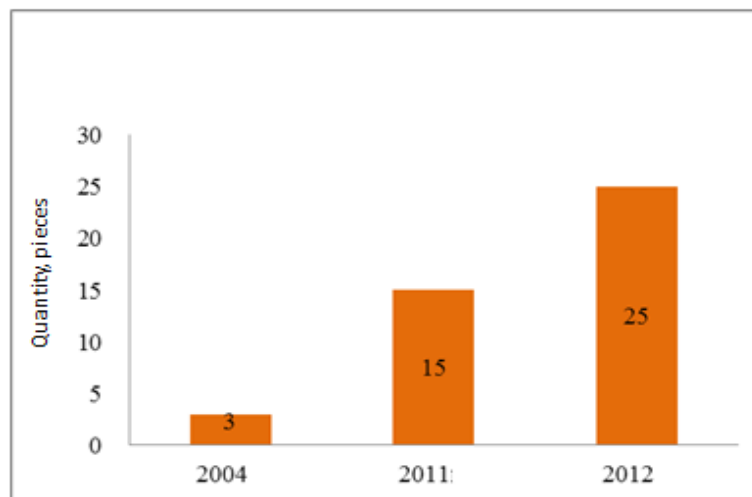


Fig.2. Using of artesian wells stock

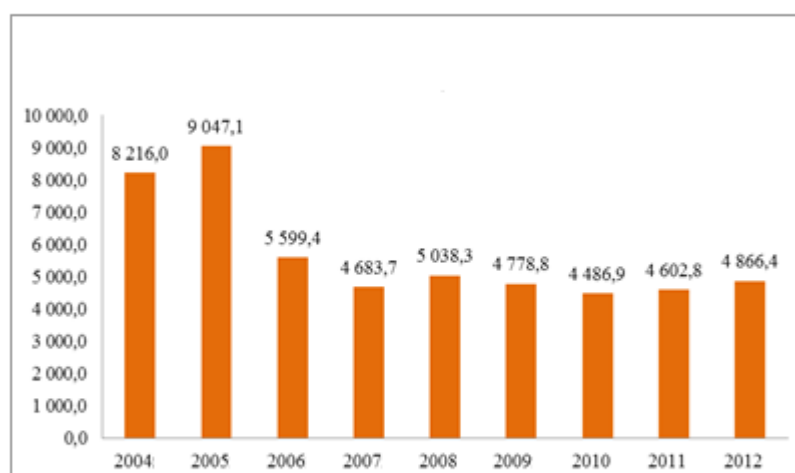


Fig.3. Dynamics of consumption of electric energy from 2004 to 2012, thousand KW

Starting From 2004 the capital investments in the amount of 119,0 million rubles (\$3.6 mln) were made for ensuring reliability of functioning and decrease in production costs. Those actions allowed to achieve almost accident-free operation and to decrease significantly production expenses by 33,0 million rub per year (more than 30%). The main components of the reduction of the prime cost are as follows:

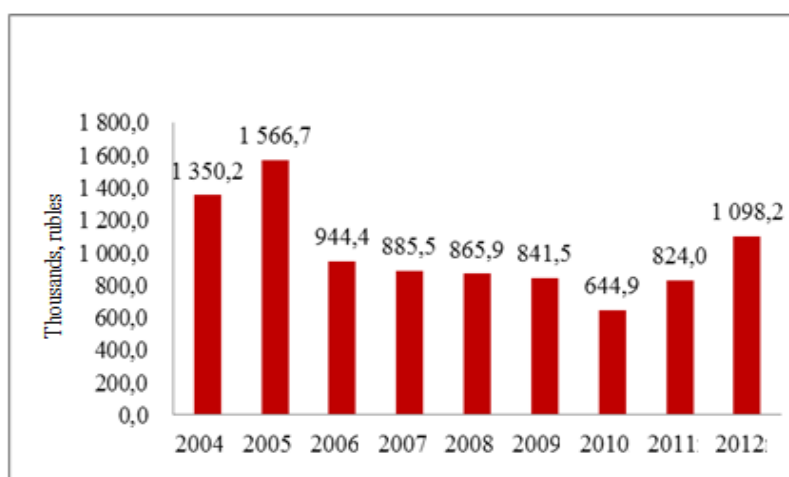


Fig.4. Expenses on chemical reagents

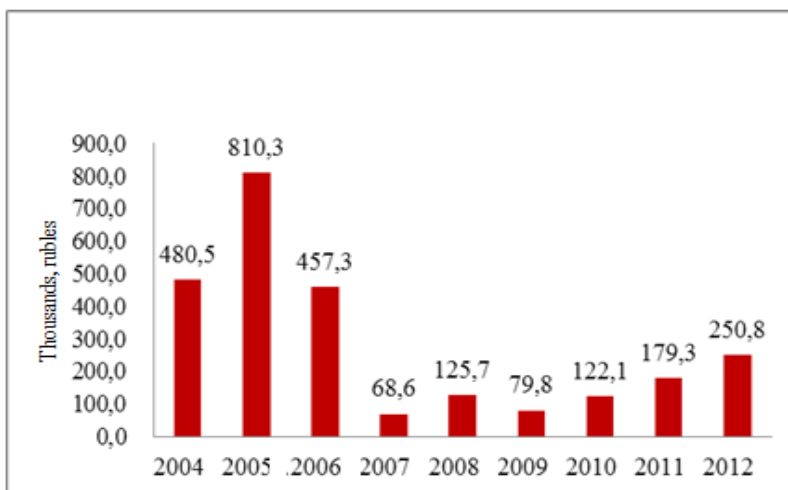


Fig.5. Payments for environmental pollution

However the reached expenses decrease didn't lead to the essential increase in an overall performance of the enterprise as a whole and didn't enhance the investments return for a number of reasons:

(1) The most notable factor is objective decrease in physical volumes of realization in water supply and water consumption (35,3% and 40,4% respectively from level of 2004). Thus total cost of services increased by 7,4%, and the revenue of realization – by 2,9% mostly due to the growth of tariffs. In aggregate growth of tariffs and calculations transfer via metering devices, and falling of physical outputs in the average Russian cities continue to support the trend of water utilities' services physical volumes reduction.

(2) The considerable part of the reached economy on expenses is withdrawn by federal natural monopolies due to the advancing growth of their tariffs rates:

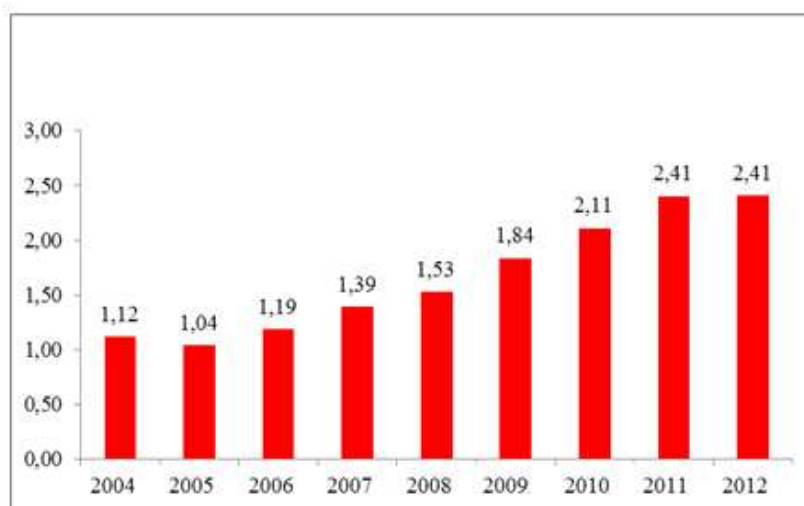


Fig.6. Average tariffs for electric energy, rubles/KW

(3) Important economic problem in the conditions of the Russian reality is represented by lack of support, understanding and active counteraction from bodies of local government. The professional price-rating analysis is rather an exception, than an obligatory element of municipalities work. Local government acts to lead pricing bodies (The regional power commission) in the direction of maximum decrease in tariffs to the detriment of system aiming for populist decisions operability proper maintenance, and ignoring moral ethical standards, thus breaking the principle of balance.

As a result each party seeks for achievement of marginal result instead of achievement of the higher quality of services. The situation is aggravated with restrictive practice of federal regulators, that are set annually without taking into account lifecycle of infrastructure projects.

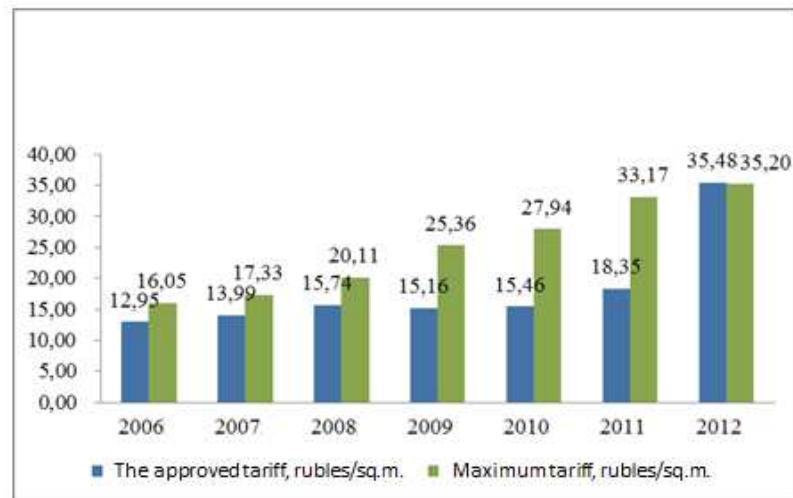


Fig.7. The comparative analysis of the actual growth of a tariff for water supply services with greatest possible

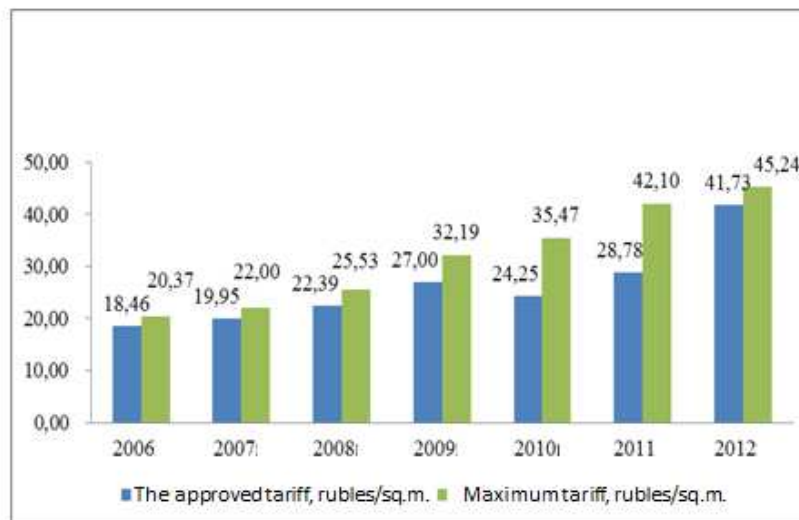


Fig.8. The comparative analysis of the actual growth of a tariff for water disposal services with greatest possible

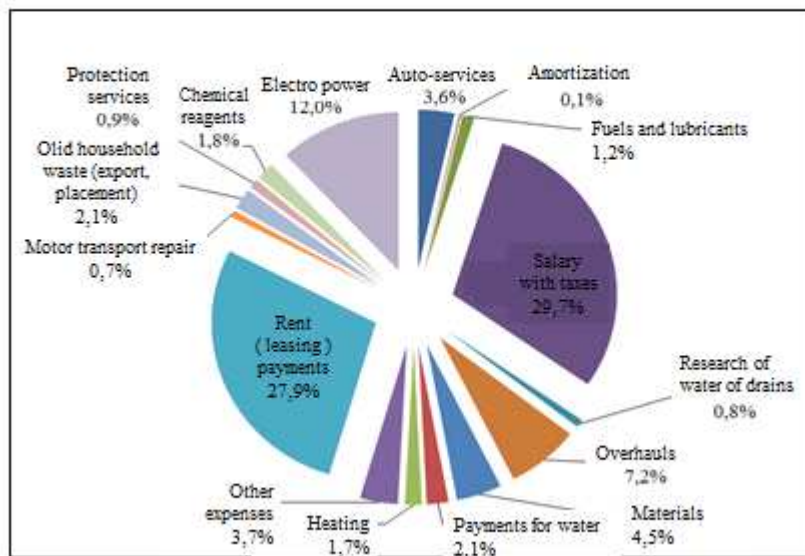


Fig.9. Expenses structure of "Uralvodokanal" for 2004 year

Structure changes of LLC "Uralvodokanal" expenses for the considered period are presented below:

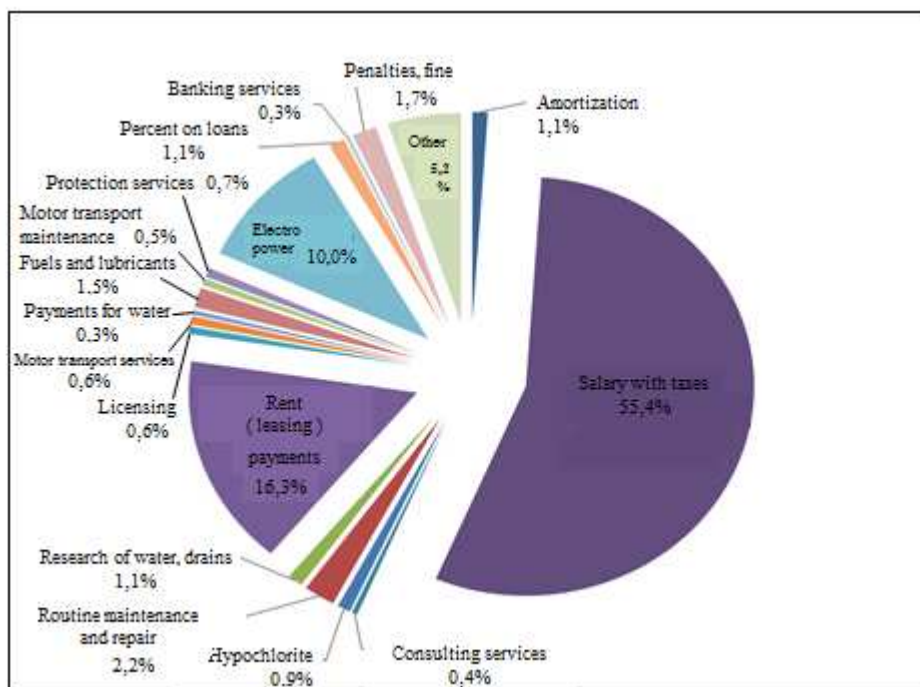


Fig.10. Structure of expenses of "Uralvodokanal" for 2012 year

It is well seen from the data above that expenses are compressed to a limit, internal reserves are almost depleted, the production program (tariff) does not provide funds for development of fixed assets. The number of examples when trusting to luck turns in a technogenic catastrophe, increases in a geometrical progression with time.

(4) Judicial proceedings held for the purpose of adjustment decisions unreasonably made by the pricing bodies take away a lot of effort, time and funds. More than 20 judicial proceedings took place with participation of LLC "Uralvodokanal" during the period since January, 2011 (about 75% of total amount – the claims connected with opportunistic behavior of consumers). However even absolutely advantageous

cases neither reduce the average number of the current assets in receivables, nor provide sufficient decrease in transaction expenses.

(5) Expenses connected with continuous pressure from law enforcement authorities are also significant. Local managers have formed the stereotype according to which the lack of financing can be compensated by an increase of pressure strengthening from the administrative and power block.

Based on the above it is clear that the private water utility has no alternative options of survival, except further decrease in expenses. Therefore, when internal opportunities are substantially exhausted, the only alternative is to work with outer effects, the majority of which has a negative influence.

As it is defined by the theory, negative externality effects appear in the conditions of property rights "washing out" and lack of economic feasibility of the transaction expenses connected with protection of these rights. The typical aspects of resource-supplying organizations (RSO) functioning are: shipping opportunities, law nihilism and management companies "cloning", deliberate bankruptcy of consumers, unauthorized inserts in resource transportation systems, etc. As a result all negative externalities find reflection in the increase of tariffs which leads to the decrease of service quality. Losses from externalities with the limit coefficients for tariffs growth set by federal authorities significantly reduce a share of productive costs. Low efficiency of regulatory base and poor performance of law-enforcement system not directed against unauthorized companies, result in a steady increase of burden on conscientious consumers. Consequently, it leads to the growth of opportunism, reduction of a conscientious consumers share and inevitable destruction of infrastructure as a whole.

The situation arising at operation of water folding columns (further in the text – WFC) in the private sector is classical for the water utilities working in small towns.

3 THE ANALYSIS OF LOSSES OF LLC "URALVODOKANAL" DURING THE WORK WITH WFC

To date the supply of drinking water to consumers in the economically weaker section residential districts "Komarovo" and "Zadobryanka" (further in the text – the private sector) is carried out in two ways:

- by connection to the water supply system directly in the house;
- by water supply through street WFC.

In the first case subscribers pay off with RSO – "Uralvodokanal" according to indications of water metering devices, the installation of which are obligatory for subscribers. In the second case the subscribers of the WFC pay off according to the rates of water consumption approved for this category of the consumers.

Ideally, the volume of water lifted by a water utility should be equal to the volume of water realized to consumers. In practice, the volume of water realized (paid by consumers) in the private sector is much less than the volume of water given to a water supply system (tabl. 1).

No.	Indicator	Unit of measure	Quantity
1	The volume of the lifted water	cubic meter	8 584,7
2	The volume of the realized (paid) water	cubic meter	3 490,7
3	Water losses, including:	cubic meter	5 094
3.1	The technological	cubic meter	502,0
3.2	Error of metering devices of water (further in the text- MDW)	cubic meter	482,0
3.3	Leaks through consolidations of network fittings	cubic meter	1 977,0
3.4	Losses at the expense of natural losses	cubic meter	107,0
3.5	Unauthorized (unpaid) analysis of water through WFC	cubic meter	2 026

Table 1: The analysis of average monthly indicators on water supply of the private sector in 2013 year.

As shown in the table above, water losses in the private sector (without modern conveniences) make up 5 094,0 cubic meters or 59,3%, which brings up a question about economic efficiency of rendered services in water supply. The structure of water losses is presented in the chart.

The chart visually presents that the greatest specific weight – 39,77% is occupied by unauthorized water consumption through WFC. The analysis made by company specialists showed that unauthorized consumption of water includes:

- water consumption by the accidental consumers who don't have contracts for water supply (consumers come to WFC by cars, gain capacities and leave);
- water consumption by the constant consumers who consciously aren't signing contracts for water supply, proceeding from real or imaginary belief that water in WFC – is a national property for which it is not necessary to pay for, or considering free water supply as a compensation for the absence of other amenities;
- water consumption by the consumers having contracts for water supply at home through water supply systems with metering devices, but actively using WFC.

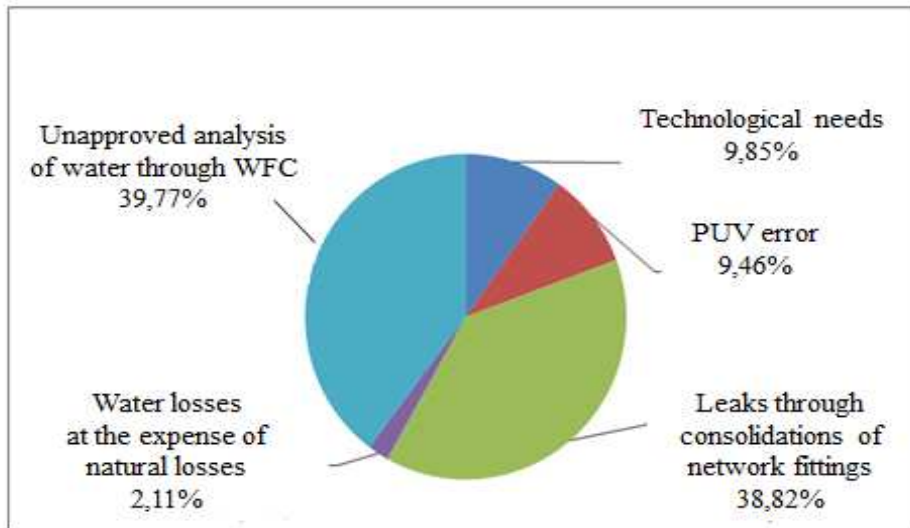


Fig.11. Structure of losses of water in uncomfortable part of the city of Dobryanka

Using the tariffs rates for 2013 year, it is easy to estimate losses of the water-supply organization in the private sector. Monthly LLC "Uralvodokanal" loses 180 735,12 rubles, including unauthorized consumption of water through WFC – 71 882,48 rubles or 862 589,76 rubles a year.

Besides losses, the water utility company should incur expenses on maintenance and elimination of emergencies on WFC, not relying on operation frequency and water consumption volumes.

Actions attributed to maintenance and technical repair which are carried out by a water utility company are as follows:

- replacement of fast-wearing-out materials WFC (rubber laying, collars);
- replacement of joints (water intakes);
- pumping of wells;
- warming WFC during the winter period.

Maintenance and heating costs were calculated for the one WFC for the purpose of the analysis and optimization which made 4 903,75 rubles and 2 452, 34 rubles respectively. For 2012 year 17 water pumps were repaired and 15 of them were warmed. Based on the data above, "Uralvodokanal's" annual operational expenses under this budget line made 120 148,85 rubles.

4 THE DECISION OF "A PROBLEM OF THE FREE RIDER" AT WFC OPERATION

Summarizing the above "Uralvodokanal" annually incurs losses from unauthorized consumption of water through WFC of 862 589,76 rubles and maintenance and warming costs of 120 148,85 rubles with WFC providing conscientious customers with drinking water according to the current legislation. Total expenses connected in operation of WFC are 982 738,61 rubles (about 1% of total amount of realization which

significantly decreases the profitability which does not exceed 5%,) which, finally, finds reflection in the tariff rates for water supply.

The analysis shows that the established practice of subjective, most often populist decisions in forming tariffs practically leads to a lack of liquidity. The structure of expenses of "Uralvodokanal" eloquently testifies to it (see above). Therefore any insignificant options of economy of expenses, even at first sight, can't remain unnoticed.

The volume and structure of expenses for WFC operation convincingly show necessity of their reduction, the analysis prompts solutions for current situation.

The main alternative of operation of WFC remains installing a water supply system to subscribers in each house or apartment. Water supply system will allow:

- to stop unauthorized consumption of water through WFC;
- to avoid expenses for WFC maintenance;
- to organize the exact accounting of volumes of the realized water by installation of metric devices.

Nevertheless not all customers ideologically and financially ready to install a water supply system in the house or the apartment. Having possibilities of uncontrolled consumption of water, including temporary conduits (for example, made rubber hoses) many consumers do not support the offer, but also actively counteract against it. It is obvious that their financial benefit is received from pockets of other consumers, i.e. classical "the effect of the free rider" takes place.

The analysis shows that on condition of payment of the cost of materials (approximately 3.5 thousand rubles), and other expenses are gratuitous, the expense of a water utility is economically justified. The average cost of works on laying 25 meters of water supply system with installation of a well and a metering device makes 13 427,44 rubles. Today 197 contracts for rendering services of water supply through WFC are signed. The water utility company's expenses of water supply system laying will make up 2 645 205, 68 rubles counting all the consumers. The payback period of the project is estimated to be 2.7 years taking into account that the water utility will save 982 738, 61 a year in case of termination of operations of WFC.

However implementation of this economically obvious project demands to resolve two fundamental questions:

- to define a source of financing of works;
- to keep a component providing economic payback of the project in a tariff rate.

The question of the work financing is the most difficult. Sources of development financing or even preservation of system of water supply/water disposal in a good condition were and continue to remain almost not resolved issue. The practice of covering losses of municipal water utilities developed in the majority of regions is unacceptable for subjects with alternative forms of ownership like, for example, LLC "Uralvodokanal". The main sources of financing of "Uralvodokanal's" projects of development remain the money of the business firms which have been given out under guarantees of owners of fixed assets in the form of loans and financial rent. However efficiency of use of such financing remains below any criticism for two reasons:

- the price of a resource is 4-5 points higher than the bank;
- payments of percent on the loans obtained from the commercial organizations don't join in the production program also are repaid from profit of RSO which is almost zero at the moment.

A bank loan for "Uralvodokanal" is still unavailable because there are no financial institutions which accepts to credit socially focused business in Russia. This means a system mistrust of the banking system to the state pricing bodies – the Regional power commissions, and an impasse in development of state-private partnership in the sphere of housing and communal services.

A real step of creation of partnership in this sphere could become budgetary guarantees of the target credits for implementation of economically reasonable projects similar to an exception of WFC from the water supply system.

5 CONCLUSION

To summarize, it is necessary to note that the considered problem has systematic character. In addition, the necessity of its solution is obvious to all, from the highest levels of power to private consumers. The main proposed directions to resolve this situation are:

- improvement of the regulatory base of housing and urban services;
- defining a measure of territory leaders responsibilities for infrastructure operability and formation of their participation mechanisms in regulation of managing companies and RSO;
- effective formation of infrastructure projects sources of financing in small country towns of the Russian Federation.

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