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INVESTMENT IN THE MODERNIZATION OF WATER SUPPLY AND SEWERAGE FACILITIES BASED ON SOCIAL AND ECONOMIC PARTNERSHIP IN THE MUNICIPALITY

Abstract. *The article considers the problem of coordinating the economic interests of the state, the population and resource-supplying enterprises in investing in the modernization of the water supply and sewerage sector. The main problems of the water supply and sewerage sector are high physical deterioration, exceeding 70%, and insufficient funding for the modernization of this sector by the state, municipalities and private concessionaires. These problems lead to poor quality of the water supplied and high utility bills. To solve these problems, the authors propose social and economic partnership as a promising form of mutually beneficial investment instead of concessions. The proposed organizational and economic mechanism for such cooperation provides for the investment and management activity of the population in this process. At the same time, government financial support is needed for long-term public investment. The public investment will be recouped from tariff savings over the period of the modernization project. Social and economic partnership will provide the necessary funding for the comprehensive modernization of the water supply and sewerage sector using advanced trenchless technologies. As a result, the quality of public utilities will improve and tariffs will decrease in the interests of the social and economic development of municipalities.*

Keywords: *investment, modernization, water supply and sewerage, public utilities, tariffs, social and economic partnership, municipality*

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ИНВЕСТИРОВАНИЕ МОДЕРНИЗАЦИИ ВОДОПРОВОДНО-КАНАЛИЗАЦИОННОГО ХОЗЯЙСТВА НА ОСНОВЕ СОЦИАЛЬНО-ЭКОНОМИЧЕСКОГО ПАРТНЕРСТВА В МУНИЦИПАЛЬНОМ ОБРАЗОВАНИИ

В статье рассматривается проблема согласования экономических интересов государства, населения и ресурсоснабжающих предприятий в инвестировании модернизации водопроводно-канализационного хозяйства. Обозначены основные проблемы водопроводно-канализационного хозяйства, которыми являются высокий физический износ, превышающий 70 %, и недостаточное финансирование модернизации этой сферы государством, муниципалитетами и частными концессионерами. Эти проблемы приводят к низкому качеству поставляемой воды и высоким тарифам на коммунальное обслуживание. Для решения указанных проблем предлагается формирование социально-экономического партнёрства как перспективной формы взаимовыгодного инвестирования вместо концессий. Предлагаемый организационно-экономический механизм такого сотрудничества предусматривает инвестиционную и управленческую активность населения в этом процессе. При этом долгосрочные инвестиции населения должны сопровождаться государственной финансовой поддержкой и окупаться за счёт экономии по тарифам в течение периода реализации проекта модернизации. Социально-экономическое партнёрство позволит обеспечить необходимое финансирование комплексной модернизации водопроводно-канализационного хозяйства с применением передовых бестраншейных технологий. В результате повыситься качество коммунального хозяйства и снизятся тарифы в интересах социального и экономического развития муниципальных образований.

Ключевые слова: *инвестирование, модернизация, водопроводно-канализационное хозяйство, коммунальные услуги, тарифы, социально-экономическое партнёрство, муниципальное образование*

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The water supply and sewerage sector is of strategic importance in the life of the population, social and industrial activities of the city, region and country. Should be the priority direction of state policy should be the uninterrupted and proper functioning of this economic activity.

Currently, there are two main serious problems in the field of water supply and sanitation.

1. The level of physical deterioration of water supply and sewer facilities exceeds 70% and continues to grow by 2-3% per year.

2. The volume of investments in modernization is not sufficient and does not allow increasing the pace of modernization to the normative 5% per year. The accumulated investment deficit is more than 1.5 trillion rubles [14].

In turn, these problems are the causes of many other problems in the water supply and sewerage sector. The main ones are listed below.

- This is an increased accident rate of utility pipes;

- These are significant water losses during transportation (in the amount of 2.9 billion cubic meters per year) [5];

- This is the low quality of the supplied water resource (sanitary and chemical indicators deviate from the standards by 20-60% and more);

- This is a low share of legally treated wastewater (13.4%) compared to many other countries such as Argentina (22%), Albania (67%) and Germany (98%)[1].

The problem of inefficient tariff setting for water supply and sewerage services is a consequence of the above problems. Tariffs are high for the population, but at the same time economically unjustified and understated for resource-supplying enterprises. As a result, more than 80% of water supply enterprises are unprofitable.

Famous scientists such as Nemkin P.V., Chekalin V. S. [8], Solopova N. A., Selezneva Zh. V. [13], Chumakov S. V. [4], Bahri P. A., Ho G. [2] and others devoted scientific works to theoretical and methodological aspects and modern problems of economics and management of public utilities, including the issues of modernization of water supply and sewerage.

Scientific approaches to the formation of a mechanism for coordinating economic interests in public utilities are presented in works written by Avanesyan V. R. [1], Kuznetsov I. A. [6], Larin S. N., Lazareva L. Yu., Yuryatina N. N. [7] and others.

At the same time, it is necessary to improve an integrated approach to organizing economic interaction between all subjects of the public utilities sector when investing in its modernization.

The current investment mechanism is based on attracting private businesses in the form of concessions [9] with insufficient government funding and indexation of tariffs below the growth of current utility costs.

Under these conditions, investments in comprehensive resource-saving modernization do not come in the required volumes. Repair and restoration work is carried out pointwise, for a long time and inefficiently in relation to payments from the population. There is an additional increase in tariffs in order to accumulate funds for the implementation of investment programs and profit. This approach is contrary to the goals of transferring communal facilities to a concession. Since the essence of the concession is the need to attract funds from outside.

As a result, the state monopoly is transformed into a private-state monopoly. The economic efficiency of the concessionaire is provided as a priority. Local governments weaken the controlling function. They do not respect the public interest enough. The population is the actual investor in concession projects and is officially deprived of this status and rights.

[1] Decision of the Committee on the Federal Structure and Issues of Local Self-Government under the State Duma of the Federal Assembly of the Russian Federation dated March 17, 2021 No. 125/6 “On the recommendations of the Committee of the State Duma on the Federal Structure and Issues of Local Self-Government following the results of the “round table” on the topic: “Issues of the application of legislation of the Russian Federation on water supply and sanitation and the implementation of the powers of municipalities in this area". URL: http://komitet4.km.duma.gov.ru/upload/site28/reshkom_125.6.pdf (Accessed on August 5, 2022).

The investment tariff component is formed in a way that is not obvious to the population. Consumers are additionally dissatisfied. There are no incentives to reduce operating costs and attract investment in the utilities sector.

The authors summarized domestic and foreign experience of public-private partnership [10, 11]. This experience confirms the need for the government to play a key role in investing in water and sewer modernization projects [17]. Otherwise, prices for water supply rise by 16-40% with unchanged and even declining indicators of the efficiency of service by private business, as, for example, not only in our country, but also in Europe [3, 12].

It is necessary to form a new mechanism of economic relations for effective investment in the modernization of the water supply and sewerage sector at the regional and municipal levels.

The authors used the hypothetical method, the scientific abstraction method, and the generalization method in the study.

It is concluded that such a mechanism should be based on mutually beneficial economic cooperation between the state, municipalities, resource-supplying enterprises and the population [15].

The public interest must come first and be about improving the quality of public services and lowering service charges. These goals can only be achieved through the implementation of a comprehensive modernization and preservation of the public nature of public services with a socially significant focus.

Social and economic partnership should become a form of such investment and economic cooperation.

The new form of partnership involves giving the population the status of an official investor, in contrast to the form of public-private partnership. The population is the main customer and consumer of public services. In its own interests, it will begin to invest in projects for the comprehensive modernization of public utilities.

Public investment should be accompanied by the attraction of public funding and possible investments from third-party investors, including businesses.

The proposed investment mechanism is based on simple and economically sound indicators. These indicators can be determined for specific municipalities according to the reports of local governments. Therefore, it can be put into practice.

The target indicators for the functioning of the mechanism should be the payback period of capital investments and the gradual reduction of tariffs for public services in the form of an economic effect of modernization.

The economic effect of the comprehensive modernization will be ensured by eliminating water leaks, reducing current repairs and saving electricity in public services.

The authors took into account the requirements of a systematic approach in the formation of the investment mechanism. The individual goals and interests of investors must strictly comply with the overall mission of the integration social and economic partnership.

This mission consists in uninterrupted provision of the population and other consumers of the municipality with high-quality and competitive water supply and sanitation services.

Controlling effective influences and structured decisions should be focused on the criterion of optimality and constraints that represent the interests of investors and, above all, the public interest.

That is why the target profit indicator should be absent in the proposed mechanism as opposed to the mechanism of concession agreements. Public capital investments and state financing should ensure the targeted attraction of the required volume of investments, but the attraction of extrabudgetary sources is not excluded.

The following Fig. 1 shows the organizational and economic mechanism of social and economic partnership between the municipality and the population.

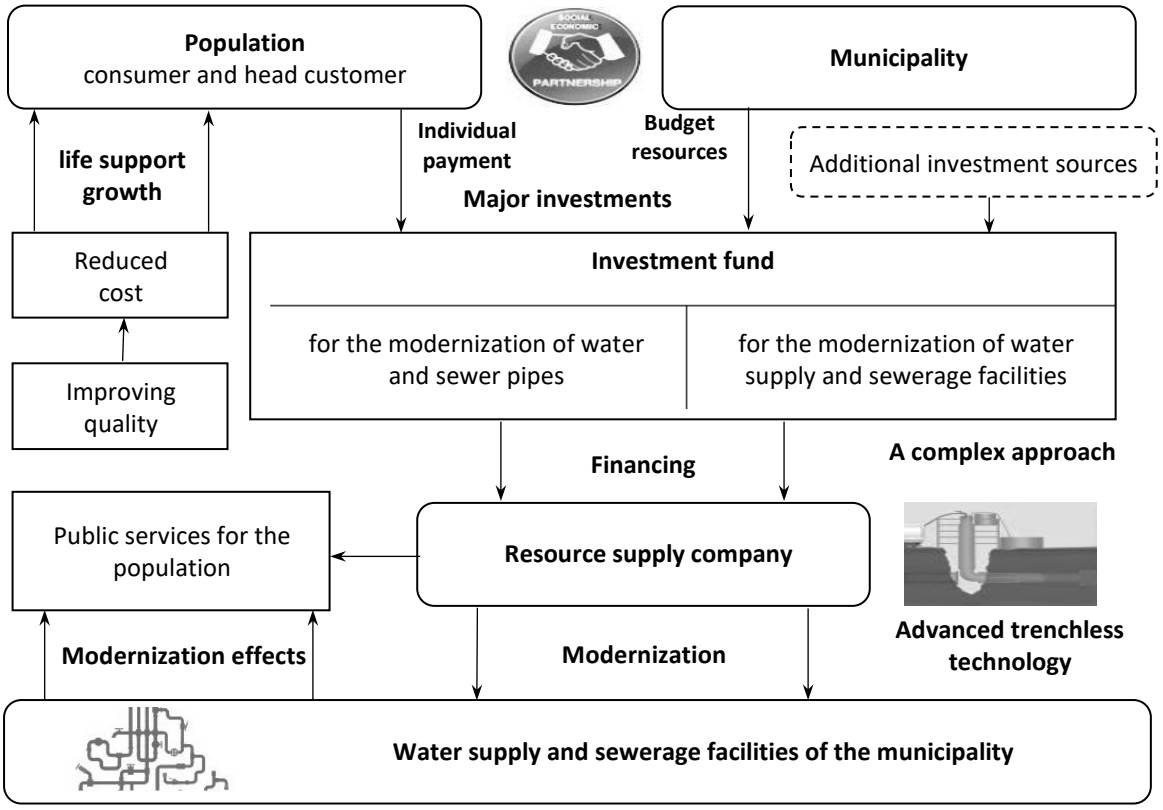

Fig. 1 – Organizational and economic mechanism for the modernization of the water supply and sewerage sector in the form of social and economic partnership

The authors identify the following conditions for the formation of the organizational and economic mechanism of social and economic partnership.

- To create an investment fund, it is necessary to make monthly investment payments from the population and the budgetary funds of the state and municipality to a special account of the resource supplying enterprise, which must carry out the modernization.

- The amount of a separate investment payment should be calculated per payer per month based on the economically justified amount of investment, the population of the municipality consuming utilities, and the planned modernization period with an average duration of 15 years.

- Budget financing should be provided in the form of special projects and programs for the modernization of communal facilities. Its share should make the individual investment payment easy for the population.

- Budget financing is especially important at the initial stages of modernization, when significant one-time investments are needed. These investments will be directed primarily to the modernization of pumping stations, treatment facilities and the purchase of special equipment.

- It is possible to attract financing from private business, which is also a consumer of utilities, special funds of financial institutions and development banks on a fully or partially repayable basis.

- The amount of the investment payment should be separated from the utility tariffs. The current tariffs mainly include the costs of routine maintenance and emergency repairs of worn-out engineering communications. There is an annual increase in tariffs at the maximum permissible level. It excludes the possibility of their additional increase by including an investment payment in the tariff.

- The size of the individual investment payment should be interconnected with the establishment of tariffs for water supply and sanitation

services. But at the same time, the new tariff setting system should be fundamentally different from the current practice of setting tariffs based on the revenue approach in concessions. Currently, the tariff includes the profit of the investor and the return on invested capital. The current approach ensures the interests of the concessionaire, but cannot provide the necessary volume of investments for the implementation of a comprehensive modernization within a certain period. As a result, tariffs for utilities are growing every year, and the depreciation of communal facilities is constantly increasing. That is why the income component in the form of profit should be excluded from the tariff. The efficiency of investments should be the annual reduction in maintenance costs as a result of the modernization of the water supply and sewerage system by eliminating water leaks (up to 20%), reducing current repairs (up to 10%), and saving electricity during maintenance (by 10%). Such an economic effect should be taken into account in the cost component of the tariff. As communal facilities are modernized, the annual reduction in tariffs will reduce the payment burden for the population and will become a source of return on investment in the planning period.

- The investment fund should be directed to advanced trenchless technologies (pipe sanitation) that have proven their effectiveness in domestic and international practice [16].

- The volume of investment should be linked to a phased plan for the modernization. One part of them should be directed to the modernization of water supply and sanitation facilities (stations, structures) and the purchase of special equipment and vehicles. Another part of them should be directed to the modernization of water and sewer pipes and to the elimination of technological losses, accidents and damage.

- Control should be over the targeted spending of investments. To do this, it is necessary to form plans for financial flows by years in accordance with the plan for the modernization of the water supply and sewerage facilities in the territory of a particular municipality.

Thus, social and economic partnership will ensure the creation of mutually beneficial economic cooperation and effective financing of innovative activity in public utilities.

The practical application of the proposed mechanism will achieve the following results.

1. Public and socially significant signs of public utilities will be preserved in the interests of the population. The investment payment will be calculated for a specific payback period and a specific strategic goal to improve the quality of public services and reduce tariffs. At present, it is not known what the population pays for at the established tariffs. In fact, the population should have a clear idea about their investments. Social and economic partnership will ensure such rules.

2. Targeted investments will flow into resource-saving trenchless technologies for the comprehensive modernization of water supply and sewerage facilities. The effective application of pipe sanitation will improve the quality of utilities and reduce their cost.

3. Full restoration and renewal of water supply and sewerage facilities will take place in the planning period (estimated within 15 years).

4. The quality of drinking water and public services will improve.

5. Tariffs will fall and inflation will slow down.

6. The payment burden of the population will decrease for utilities.

7. State responsibility will increase and control over the activities of resource-supplying enterprises will be strengthened by local governments responsible for life support systems.

8. It will be possible to finance in full the economic activity of resource-supplying enterprises both during the modernization and after its completion. As a result, municipal unitary enterprises will be able to free themselves from the financial and economic crisis and provide uninterrupted high-quality water supply and sanitation services.

The results of the study will make it possible to develop practical recommendations for the implementation of the idea of economic

cooperation in investing in public utilities with a predominance of public interests.

Thus, the population will become a customer and an active investor in the modernization of public utilities. The mechanism of long-term public investment should provide for state financial support and return on public investment through tariff savings.

The organizational and economic mechanism of investment should be applied in conjunction with the tariff setting system. This will provide an opportunity to increase the social and economic efficiency of reforming the public utilities at the state, regional and municipal levels.

State authorities and local self-government bodies and specialists from resource-supplying enterprises will be able to develop socially-oriented investment projects for the comprehensive modernization of the water supply and sewerage sector.

These projects will be aimed at improving the quality of public services and reducing tariffs in the interests of the social and economic development of municipalities.

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