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WORLD EXPERIENCE OF MANAGING THE RESOURCE PROVISION OF HOUSING AND COMMUNAL SERVICES OF TERRITORIAL COMMUNITIES: ADAPTATION FOR UKRAINE

Abstract

The article examines the theoretical and applied aspects of managing the resource provision of housing and communal services of territorial communities in the conditions of modern challenges, in particular decentralization and military risks. Scientific approaches to determining the role of financial, material and technical, energy and personnel resources in ensuring the effective functioning of communal infrastructure are summarized. It was established that despite the expansion of the powers of territorial communities as a result of reforms, the system of communal property management and housing and communal services in Ukraine remains insufficiently effective and needs improvement.

The purpose of the article is to substantiate the strategic directions for improving the system of managing the resource provision of housing and communal services of territorial communities of Ukraine based on the analysis and systematization of the best global practices. In the process of research, modern models of housing and communal services management in developed countries are considered, in particular public, delegated, privatized, corporate, regionalized, digital and environmentally oriented. Hybrid models that combine public

management tools and market mechanisms have been proven to be the most effective.

It is substantiated that increasing the efficiency of housing and communal services largely depends on the implementation of public-private partnership, digitalization of management, development of energy-efficient technologies and integration of resources within the concept of sustainable development. Special attention is paid to the analysis of financial instruments, in particular the use of infrastructure and «green» bonds, as well as mechanisms for ensuring the financial autonomy of utility companies.

The key directions of adaptation of the European experience to Ukrainian realities have been determined, including decentralization of energy systems, increasing the energy independence of communities, implementation of smart technologies, development of participatory management and strengthening of stakeholder interaction. It is emphasized that in the conditions of war, the formation of sustainable housing and communal services systems capable of ensuring the continuity of service provision and rapid restoration of infrastructure is of priority importance.

It was concluded that the effective management of housing and communal services resources of territorial communities is based on a complex combination of institutional, financial, technological and social tools, which ensures the improvement of the quality of life of the population and creates prerequisites for the sustainable development of territories.

Keywords: housing and communal services, community, communal property, energy efficiency, communal infrastructure.

Problem statement. Today, housing and communal services are one of the most critical and at the same time problematic spheres of life of territorial communities. In conditions of limited budget funds and infrastructure wear and

tear, the issue of effective resource management becomes at the level of national security. World practice demonstrates the transition from a "consumption model" to a "sustainable management model", where community resources are used as sparingly as possible thanks to innovative technologies and new forms of ownership. Studying this experience will allow Ukrainian communities to avoid mistakes and build a sustainable life support system.

Analysis of recent research and publications. Scientists study various aspects of the resources of territorial communities, features of communal property management and housing and communal services of the population. In particular, Reshetilov G. notes that as a result of decentralization and local self-government reforms, territorial communities have received more resources and powers to dispose of them, in this sense the issue of local development has become especially relevant for communities and factors affecting local economic development are being investigated [1]. Harmata Ye. emphasizes that despite the long-term reform of local self-government, the system of communal property management of territorial communities is still the most imperfect [2].

Korbutiak A., Lysenko Zh. Sokrovolska N., Oleksyn A., Yurii E. investigate the factors that affect the financial support of territorial communities and the effectiveness of local budget management [3]. Kamashev A. analyzes the global experience of the development of the infrastructure of territorial communities, in particular, they indicate that housing and communal services for the population of the territorial community belong to the social infrastructure and depend on its specifics [4]. Bizonych D. compares the management of housing and communal services in Ukraine and European countries and offers to use the experience of the Republic of Poland for Ukraine. This study also focuses on the fact that household consumers of housing and communal services in Ukraine have no alternative in choosing a service or management company, except for the creation of associations with co-owners of multi-apartment buildings. [5]. Tymoshchyk L. substanti-

ates practical approaches to improving the assessment of property of territorial communities and notes that the optimal option is the concentration of funds from local budgets and property of several territorial communities for the creation of joint communal enterprises [6].

Formulation of the article's objectives. The purpose of the article is to substantiate the strategic directions of improving the system of managing the resource provision of housing and communal services of territorial communities of Ukraine based on the analysis and systematization of the best world experience.

To achieve the set goal, the following tasks were defined and solved:

To study modern models of housing and communal services management in the developed countries of the world.

Identify obstacles and opportunities for adapting foreign practices to Ukrainian realities.

Main part. World experience shows that the effectiveness of managing the resource provision of housing and communal services of territorial communities is largely determined by institutional conditions, in particular the role of state and municipal authorities, as well as the evolution of forms of ownership and management. In this context, the key is the combination of principles of public administration and market mechanisms, which allows achieving a balance between the social orientation of services and the economic efficiency of their provision (table 1).

The experience of developed countries demonstrates that the active role of the state is to form a regulatory framework, establish quality standards, tariff regulation and stimulate innovation. At the same time, local governments act as direct management actors responsible for adapting policies to local conditions, planning infrastructure development and ensuring continuity of service provision. Such a multi-level governance model is in line with the concept of multi-level

governance, which ensures the coherence of decisions at different levels of government [10].

Table 1

Generalization of housing and communal services management models: European experience

№	Model	Essence	Role of the State	Countries/examples	Advantages	Disadvantages
1	Public (municipal)	Direct Community Management	High	Germany, Sweden	Social orientation	control Low flexibility
2	Delegated (PPP)	Private operator contract	High (owner-ship)	France, Italy	Investment, efficiency	Mono-polisation risk
3	Privatised	Total Asset Transfer	Regulator	United Kingdom	High Performance	Social Risks
4	Municipal corporations	Commercialized public enterprises	Owner	Germany (Stadt-werke)	Balance of efficiency and control	Need for quality management
5	Regionalized	Community Unification	High	France, Poland	Economies of scale	Difficulty of coordination
6	Multi-utility	Service integration	High/ mixed	Italy, Germany	Resource synergy	Management complexity
7	Digital	Smart Management	High	Netherlands Estonia	Transparency efficiency	High investment
8	Environmental (circular)	Integration of resource flows	High	Sweden	Sustainability environ-mental friendliness	High implement-tation cost

Source: Compiled by the authors based on [7-10]

An important factor in increasing efficiency is the transformation of forms of ownership in the field of housing and communal services. In world practice, mixed and alternative forms such as public-private partnerships, concession management models; corporate and cooperative forms of organization; and the involvement of private operators in the management of infrastructure facilities are actively developing alongside traditional public and communal property.

In particular, public-private partnership mechanisms (PPP) allow combining financial and management resources of the state and business, which contributes to

the modernization of infrastructure, the introduction of innovations and the improvement of the quality of services. At the same time, such models require effective state control to prevent monopolization and ensure the availability of services for the population.

In addition, there is a trend in many countries towards the introduction of new management approaches, in particular new public management, which involves a result orientation, increased efficiency in the use of resources, the introduction of corporate management methods in the public sector and increased responsibility for the quality of service provision.

Community participation also plays an essential role, complementing institutional governance arrangements. Involvement of citizens in decision-making processes, control over the activities of service providers and development of local initiatives contribute to increasing transparency, accountability and efficiency of resource use.

The development of territorial communities in modern conditions is determined by the level of efficiency in the use of basic resources, among which financial, material and technical, energy and personnel resources occupy a leading place. In the field of housing and communal services (housing and communal services), these resources form the basis of the functioning of infrastructure, ensuring the quality of services and sustainable development of territories.

Financial resources are a determining factor in the modernization of housing and communal services, as they ensure the reproduction of fixed assets, the introduction of innovations and the improvement of energy efficiency. The experience of developed countries demonstrates the transition from a subsidy model to financially self-sufficient management systems. In particular, economically justified tariffs are used in water supply systems, which ensure cost coverage and stimulate rational consumption; public-private partnership mechanisms (PPP); infrastructure bonds and “green” financing.

For example, in the USA, the Sustainable Energy Utility model provides financing of energy projects through bonds that provide long-term resource savings and return on investment for 14-20 years. In the countries of the EU and Latin America, the introduction of financial autonomy of utility companies contributes to increasing their efficiency and investment attractiveness.

The application of European experience in Ukraine is complicated by the fact that the war continues, the destruction of the critical infrastructure of territorial communities continues, internal migration processes take place, and the budgets of territorial communities are exhausted. In this context, particular attention is drawn to the practice of developing the market in green bonds, which in European trends are a good alternative to bank loans to meet the needs of the local level [8]. At the current stage of development, the green bond market in Ukraine needs to improve regulatory and organizational support. Such improvement should involve effective government regulation of the issuance of both traditional and specialized green bonds, taking into account the needs of territorial communities, in particular with the aim of reducing the shortage of financial resources. At the same time, it is important to expand the circle of issuers and investors in the green bond market, which will contribute to the mobilization of investment resources to finance promising projects in the field of alternative energy development and modernization of municipal infrastructure.

The material and technical base of housing and communal services includes engineering networks, equipment, transport and information systems. In developed countries, the key direction is the renewal of worn infrastructure; implementation of smart technologies (IoT, Big Data); integration of resource management systems (water-energy-waste nexus).

An example is the model of integrated resource management in the city of Medellin, where the utility company provides comprehensive management of water, energy and waste within a single institutional system, which increases the

efficiency of resource use and provides significant budget revenues for the city [11].

Also, in the concept of «smart cities», the use of IoT platforms allows you to optimize the distribution of resources in real time, which increases the reliability and efficiency of utility services

Energy resources play a critical role in the functioning of housing and communal services, since a significant share of costs is accounted for by energy consumption (water supply, heat supply, drainage). The key directions of effective use in European countries are the implementation of energy-efficient technologies; use of renewable energy sources; utilization of secondary energy resources.

In particular, a closed-loop model has been implemented in Sweden (Hammarby Sjöstad area), where heat from treated wastewater is used for heating and waste is processed into biogas [12].

In Armenia, the modernization of water supply systems made it possible to reduce energy consumption by almost 48% thanks to the optimization of pumping equipment and the transition to gravity systems. Similarly, in Brazil, the implementation of energy management programs provided significant electricity savings and a quick return on investment.

Personnel potential is a key factor in the effectiveness of housing and communal services management. In developed countries, special attention is paid to the professionalization of utility management; independence of management from political influence; development of digital competencies of personnel.

The experience of reforming the water supply in Phnom Penh is indicative, where increasing the professionalism of the staff, implementing transparent management and fighting corruption made it possible to reduce water losses from 72% to 6% and achieve the financial stability of the enterprise. In Medellin, an effective corporate model of utility management, independent of political influence, ensures stability of functioning and high performance indicators.

The practice of the countries of the European Union testifies to the gradual transition to a model of sustainable development, which involves the integration of energy-efficient technologies, rational use of resources and greening of management processes. At the same time, in the conditions of war, this model is supplemented by a resilience component, which orients housing and communal services systems to the ability to quickly restore and continuously function in crisis situations.

Germany's experience demonstrates the effectiveness of the implementation of decentralized energy systems, in particular the development of local energy networks (microgrids) and the active use of renewable energy sources. This approach makes it possible to increase the energy autonomy of communities and reduce dependence on centralized systems, which is critically important for Ukraine in conditions of damage to the energy infrastructure.

In Denmark, considerable attention has been paid to the development of district heating systems based on cogeneration and the use of alternative energy sources. A high level of energy efficiency is achieved thanks to a combination of technological innovations and active participation of citizens in management processes, which corresponds to the principles of participatory governance.

Sweden's practice is indicative of the implementation of the principles of the circular economy in the field of waste management and energy supply. The use of waste as an energy source, the minimization of resource losses and the development of closed production cycles contribute to increasing the overall efficiency of housing and communal services systems.

In Estonia, significant results have been achieved thanks to the digitalization of management and the introduction of smart city elements. The use of digital platforms for monitoring resource consumption, infrastructure management and interaction with citizens ensures transparency and efficiency of decision-making, which is especially important in the conditions of crisis management.

The adaptation of these practices in Ukraine involves their rethinking taking into account military risks, in particular by prioritizing decentralized solutions, increasing the energy independence of territorial communities, implementing basic energy-efficient measures and developing local initiatives (table 2).

Table 2

Directions and features of the implementation of European practices of housing and communal management in Ukraine

№	Direction	Essence	Implementation features and effectiveness
1	Decentralization and autonomy of systems	Creation and transformation of microgrids (local power systems); individual heating points; autonomous water supply systems.	More efficient management of local networks; smaller systems are easier to restore in conditions of shelling during war
2	Energy efficiency priority	Implementation of simple and quick solutions: insulation of buildings; energy-saving lighting; accounting and control of resource consumption.	This reduces the burden on the system and the costs of communities.
3	Use of renewable energy sources	Transition to «green» energy (solar panels, heat pumps)	This European trend in Ukraine is also gaining security significance as an element of energy independence
4	Digitalization of management	Implementation of digital technologies in online monitoring of resource consumption; quick response to accidents; transparency of management.	Smart city tools can be adapted even in a simplified form
5	Community involvement	Voluntary initiatives; control over the use of resources; participation in decision-making.	Participatory management practices, development of local initiatives, as well as formation of a culture of responsible consumption
6	Synergy of stakeholders	Interaction of local authorities; state; international partners; business; scientists and experts.	This allows for faster innovation even under constraints.

Source: compiled by the authors

An important aspect is also the activation of population participation in resource management processes, which contributes to the formation of responsible consumer behavior and increases the effectiveness of policy implementation.

The European experience shows that the effective functioning of housing and communal services systems is ensured through the synergy of interaction between the state, local self-government bodies, business, the scientific community and citizens. For Ukraine in the conditions of war, this model acquires special importance, as it allows combining the principles of sustainable development with approaches to ensuring the stability and adaptability of infrastructure, forming the basis for effective recovery and long-term development of territorial communities.

Conclusions. Thus, modern approaches to the development of housing and communal services are based on the integrated use of resources, which involves a combination of financial, technological and energy solutions; use of environmentally oriented models (circular economy); involvement of communities in resource management.

Regionalization and integration of services are of particular importance; involvement of the private sector; digitalization of management; orientation towards sustainable development. This allows to increase efficiency, financial stability and quality of communal services.

The effective development of communities in the field of housing and communal services depends on the comprehensive management of financial, material and technical, energy and personnel resources. The practice of developed countries demonstrates that the key conditions for improving efficiency are the institutional autonomy of utilities, the introduction of innovative technologies, the improvement of energy efficiency and the development of human capital. The integration of these resources within the framework of a single sustainable

development strategy ensures the improvement of the quality of life of the population and the long-term economic stability of communities.

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