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READINESS OF APARTMENT BUILDING RESIDENTS FOR HOT WATER SUPPLY MODERNIZATION IN UKRAINE

Introduction. The urgency of the study is due to the general state of communal infrastructure of Ukraine, which at the level of district heating companies and old buildings is worn out by more than 60% [1]. Equipment with this level of wear has long been inefficient in terms of basic functions and costs and requires replacement with modern ones. The only solution in this situation is the active implementation of energy saving measures that need to be done at all stages of the hot water supply chain (from hot water source to distribution points, including transport network) or the alternative hot water sources development, that assume complete abandonment of centralized hot water supply systems in favor of individual solutions (boilers, individual heat point, etc.).

In any case, the choice of a modernization strategy should consider the level of people's readiness for certain options for change. All this determines the relevance of scientific and expert assessment of the social and institutional readiness of Ukrainians – residents of apartment buildings to modernize hot water supply. For this purpose, a sociological study was conducted in Zaporizhzhia in the period from November 2020 to January 2021, the results of which are presented in this article.

The choice of the study site was not accidental. Zaporizhzhia is a city in Ukraine, the administrative center of the Zaporizhzhia region. Located on the Dnieper River, at its intersection by transport and communication corridors connecting the south of the country with the capital of Ukraine, western and central regions, Donbass with Kryvyi Rih. It is one of the largest administrative, industrial, and cultural centers of southern Ukraine with advanced engineering, ferrous and nonferrous metallurgy, chemical and construction industries, a river port, and an important transit railway junction.

The city of Zaporizhzhia is an example of the classic Soviet building of mass housing, which was actively carried out until the end of the 1980s. It concentrates about 65% of the productive capacity of the region and 43% of the population of the Zaporizhzhia region. However, the last thirty years, the construction of new housing with a corresponding upgrade of infrastructure has been extremely limited [2]. To this day, key elements of the Soviet utility model remain, including centralized hot water supply. Therefore, the study of the residents of Zaporizhzhia apartment buildings makes it possible to identify typical problematic aspects of centralized hot water supply modernization in Ukraine.

The purpose of the article is to determine the features of social and institutional readiness of apartment building residents for centralized hot water supply modernization in Ukraine.

Methodology. The methodological basis of the research is a set of generally scientific and special sociological methods, which are used to achieve the research goal. Theoretical grounds were formed by three streams of studies on:

1. General issues of society modernization, analysis of the current state of development of Ukraine, ways to modernize Ukrainian economy in terms of European integration and global threats, etc. [3; 4; 6; 15].

2. Processes of modernization at the regional and local levels, including research in the fields of urban sociology and sociology of economics, as well as research in the field of social interaction [6; 9].

3. Theoretical and sociological works in the field of housing and communal services [2; 13].

Data collection for the study was realized in CAPI, CAWI formats. The period of information collection is December 2020.

Population And Sample. According to the State Statistics Service of Ukraine, the current population of Zaporizhzhia in 2020 amounted to 731,922 people [16]. The average size of households in Zaporizhzhia in 2019 was 2.45 people. The number of households in Zaporizhzhia region is dominated by households with two (38.8%) and three (26.3%) persons [14].

The general population consists of residents of 2,426 apartment buildings. According to estimates and taking into account the average size of an apartment building (floors – 6.8, blocks – 4.8, apartments on the floor – 3.7), the number of apartments (households) in Zaporizhzhia is approximately 305,371 units.

The sample population size was 437 respondents, which provides a 95% confidence probability ("accuracy") and a 5% confidence interval ("error").

For the construction of the sample, quotas on age, sex, income level of respondents were excluded. The selection criteria were the area of residence (city district), informant's accommodation address (name of the street), the nature of the use of hot water supply services.

Results and discussion.

Socio-demographic portrait of respondents. The study involved a survey among apartment building residents in Zaporizhzhia, who are consumers of centralized hot water supply service. The conditions for the survey participation were, firstly, the district in which the respondent lives (actual address of residence), and secondly, their participation in the payment of utility bills and communication with utility providers. Thus, the respondents in the survey were persons who simultaneously meet these two conditions (these conditions were met by all interviewers during the survey).

The study recorded data on gender, age, level of education and financial status of respondents. The survey was mainly attended by women over 60 years of age. The general profile of respondents is presented using a two-dimensional distribution of the sample – depending on gender and age (see Fig. 1).

The distribution of the sample shows (see Fig. 2) that 70% of respondents are direct users of the hot water supply service. 27% of respondents have the possibility to use the service of hot water in their house, but mostly use individual means of hot water supply (electric water heaters or, as one respondent said, a gas boiler).

In terms of the form of management of apartment buildings, almost equally represented are

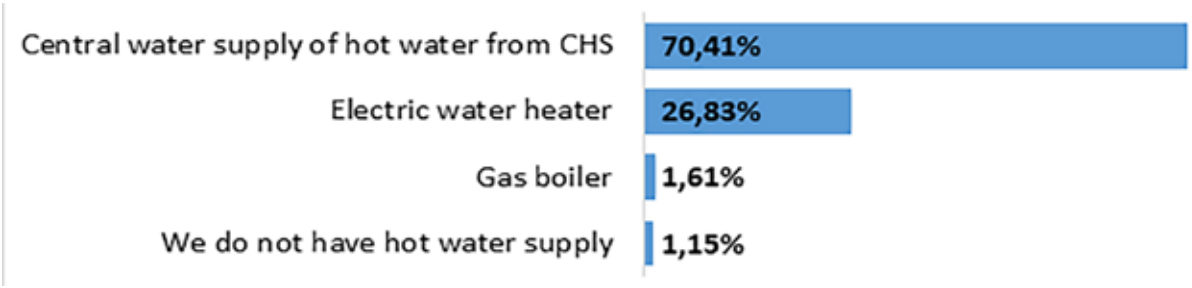

Figure 1. Distribution of respondents by gender and age quotas in % of the total, n = 437 (compiled by the authors)

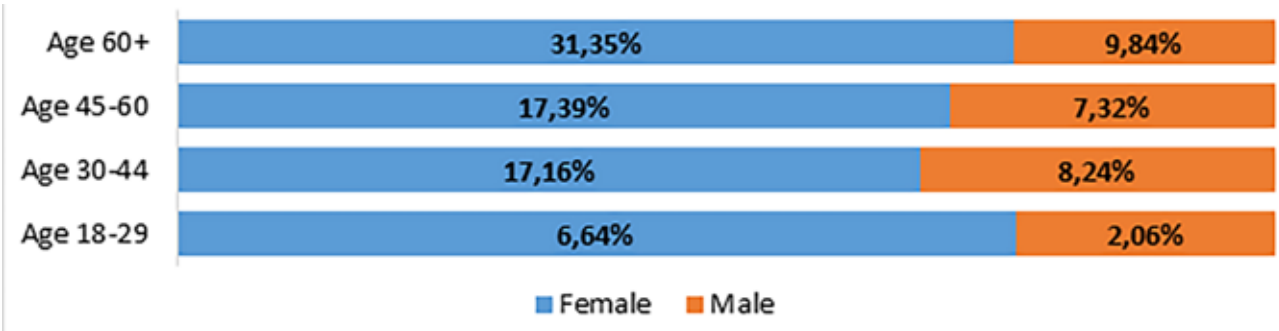

Figure 2. Distribution of answers to the question "What type of hot water supply do you use most often?", n = 437

Figure 3. Distribution of respondents who participated in the survey, depending on the form of management of their residential building, in%, n = 437

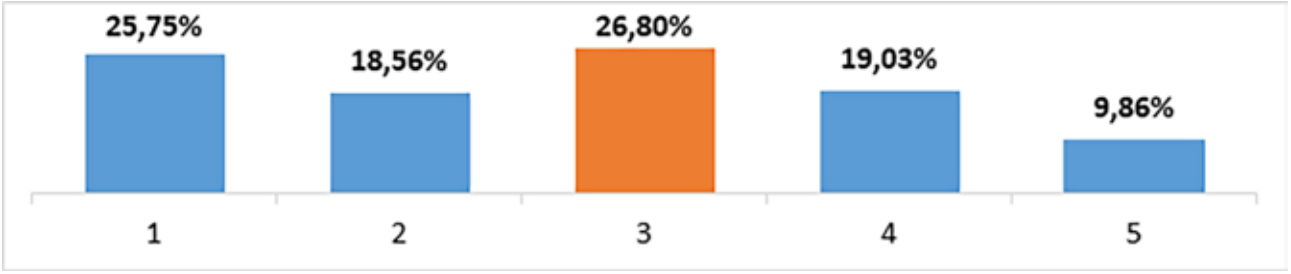

Figure 4. Quality assessment of hot water supply services, n = 437

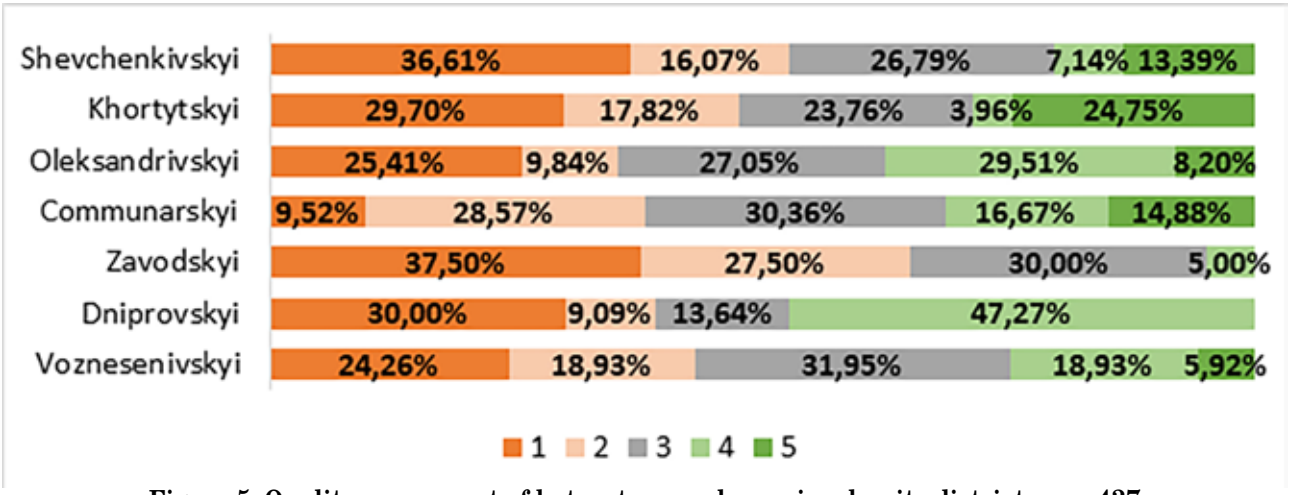

Figure 5. Quality assessment of hot water supply services by city districts, n = 437

residential buildings lead by housing cooperatives or condominiums (OSBB) and management companies (45% and 46% respectively). Only 9% of the presented residential buildings are self-managed (see Fig. 3).

The average number of floors of apartment buildings was 7 floors. More than half of the houses are nine-storey (51%). In second place – five-storey buildings (26%). Finally, it turned out that most respondents live on 4/5 (30%) or 2/3 (28%) floors.

Consumer satisfaction with hot water supply service. The survey aimed to determine the level of consumer interest in maintaining and modernizing the centralized hot water supply system. Respondents were asked to express their assessments of the quality of services they receive and satisfaction with the service provider.

To assess the quality of hot water supply services, respondents were offered a five-point rating scale, where 1 is unsatisfactory and 5 is excellent.

Most consumers rate the quality of services as a whole at an acceptable level: 26.80% – satisfactory, 19.03% – good, 9.86 – excellent. Along with this, negative ratings (1 and 2) were given by the critical mass of consumers – more than 44% (see Fig. 4).

The district analysis (see Fig. 5) of the level of satisfaction with the quality of hot water supply services identified the most dissatisfied areas in the city, namely Zavodskyi district, where the overall negative assessment is 65%, among which almost 38% of respondents gave the unsatisfactory assessment. Respondents from Dniprovskyi (47% – "good") and Oleksandrivskyi (30% – "good" and 8% – "excellent") have the highest level of satisfaction. This distribution generally corresponds to the years of construction of Zaporizhzhia: for example, in the Zavodsky district there is the most worn-out housing stock and the corresponding infrastructure.

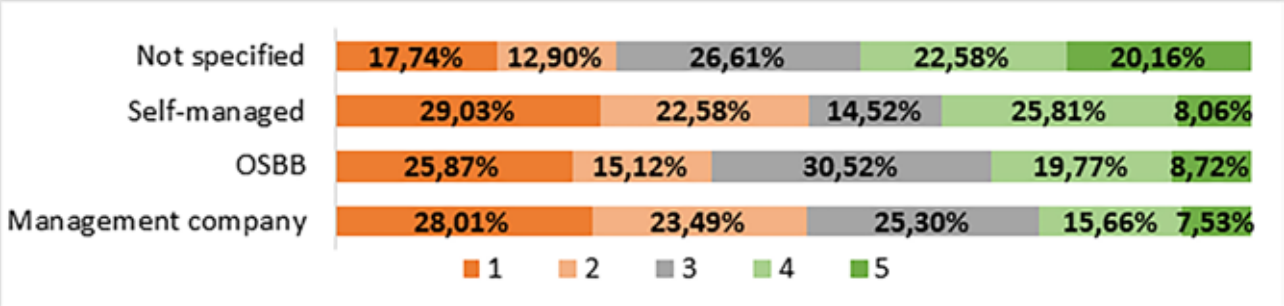

Figure 6. Quality assessment of hot water supply services by building type, n = 437

According to Fig. 6 it can be seen that the quality of hot water supply services is rated higher in OSBB (the overall negative rating does not exceed 41%, while in houses that are self-managed or serviced by the management company the level of dissatisfaction with the service reaches 52%.

The relationship between suppliers and consumers has a powerful impact on the overall level of satisfaction of the latter. Respondents who have a centralized hot water service were asked if they were satisfied with the hot water supplier. They could choose scores from 1 (very dissatisfied) to 10 (very satisfied). The results of the survey are shown in Fig. 7.

If we summarize the resulting picture, then:

– the highest scores are 8, 9, 10, – which show the greatest satisfaction with the hot water service provider, were provided by respondents from Khortytskyi (27%) and Dniprovskyi (31%) districts (residential neighborhoods and related infrastructure were built in the 1970s and 1980s at the latest);

– the middle segment of points – 5 and 6 – was indicated by 41% of respondents from Shevchenkivskyi district and 42% of Zavodskyi district;

– the lowest scores – from 1 to 3 – were noted by respondents from Zavodskyi (40%) and Voznesenivskyi districts (37%).

14% of respondents were very dissatisfied.

Overall, negative assessments of the hot water suppliers prevail positive ones – 28% vs 20%.

Collective responsibility and use of hot water meters. One of the questions of the study was to determine the number of houses in which a hot water meter is installed. Its presence is an important prerequisite for the institutional consolidation of the collective responsibility of the house residents for the rational use of water and reducing the cost of utilities.

During the survey it was found that house meters are available in 28% of respondents. Almost the same percentage of respondents stated that the common house meter is absent (26%). However, most respondents are not aware of this issue at all (45%) (see Fig. 8).

Analysis of the answers in terms of the district criteria found that most uninformed respondents live in Zavodskyi (60%) and Shevchenkivskyi (54%) districts. The Dniprovskyi district was the most modernized in this respect – it has the largest number of buildings with hot water meters (46%), the least modernized – Zavodskyi (8%) (see Fig. 9).

If we look at the presence / absence of a hot water meter in the context of the form of house management (see Fig. 10), it was determined that the factor of successful modernization is the transition of the apartment building to OSBB status – this category has the highest level of awareness on collective responsibility (44% answered "I don't know") and the highest level of availability of a hot water meter (36%).

The worst option for modernization is a building serviced by a management company. In such apartments, the level of uncertainty of residents reaches 58%, and the percentage of apartment buildings with hot water meters reaches 24%.

The second question regarding meters was to record the fact of the presence / absence of apartment meters in the respondents' apartments. The number of respondents with meters was 89%. Only 11% of respondents stated that there were no hot water meters in their apartments.

Fig. 11 shows that the majority of respondents without a meter are recorded in self-management houses (15%), and the smallest number is in OSBB (11%).

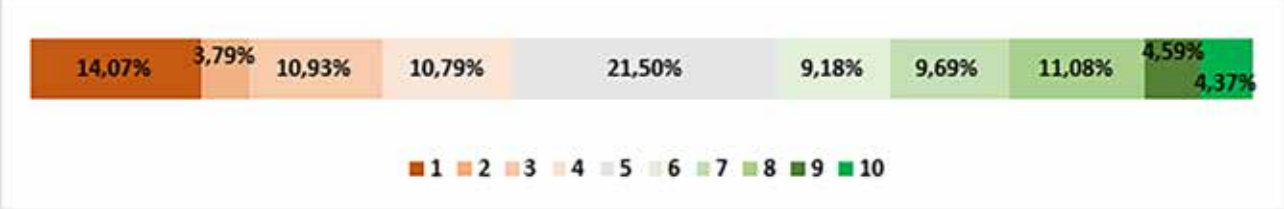

Figure 7. Evaluation of satisfaction with the hot water supplier, n = 43

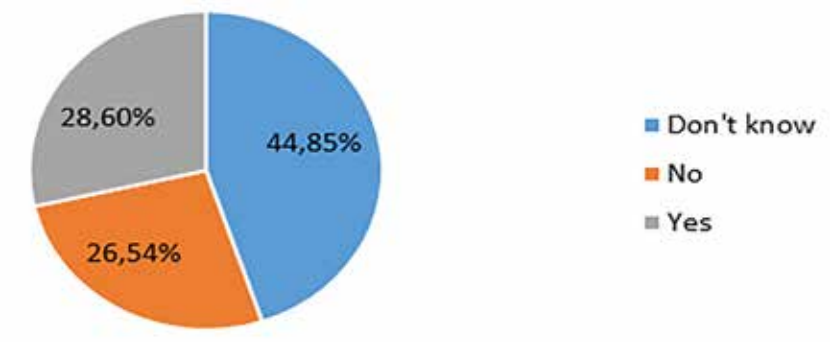

Figure 8. Distribution of answers to the question "Does your house have a hot water meter?", n = 437

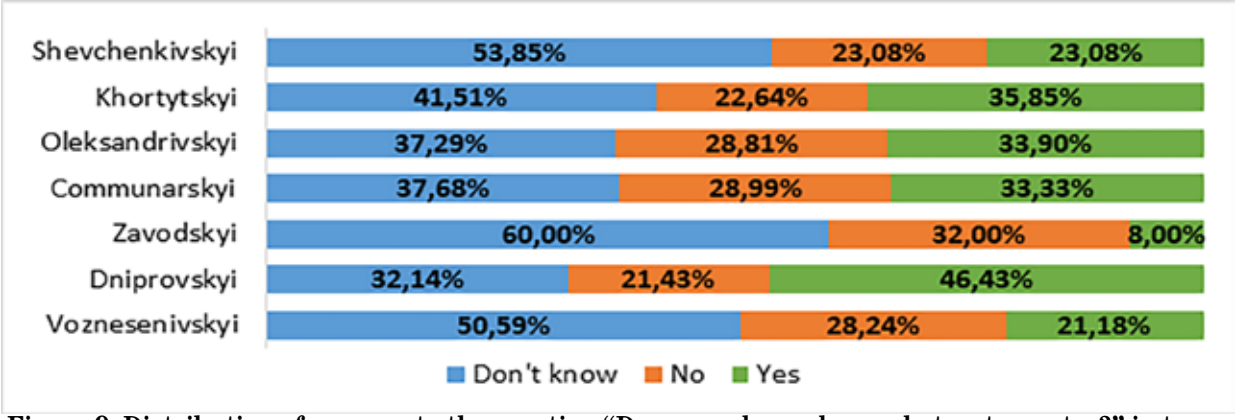

Figure 9. Distribution of answers to the question "Does your house have a hot water meter?" in terms of the district of residence of the respondents, n = 437

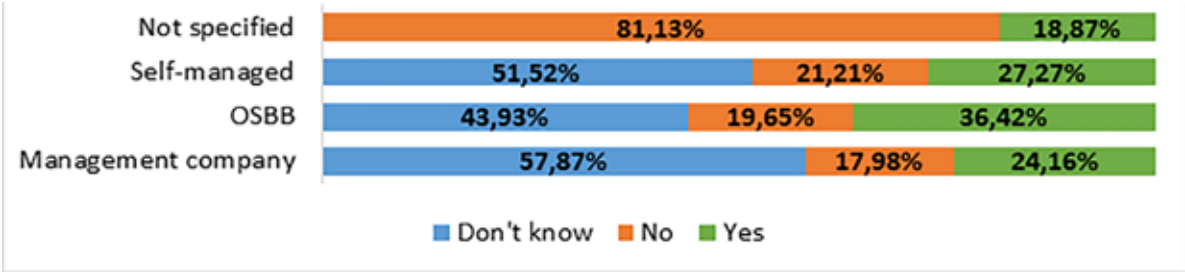

Figure 10. Distribution of answers to the question "Does your house have a hot water meter?" in terms of the form of house management, n = 437

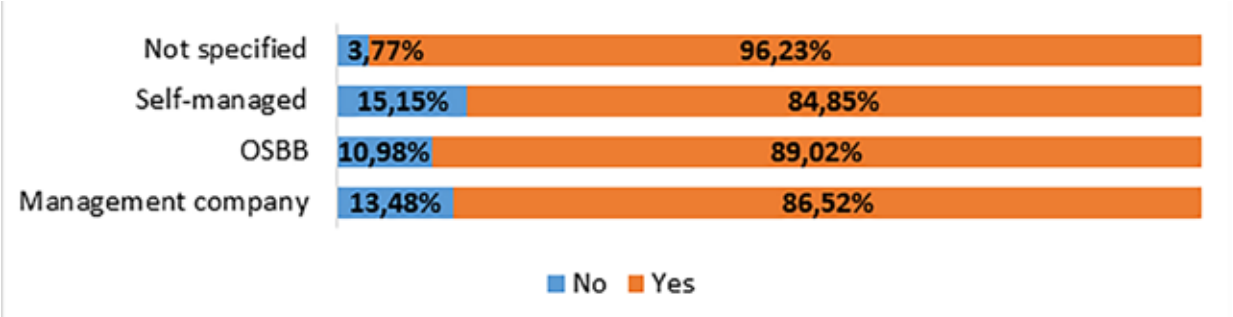

Figure 11. Distribution of answers to the question "Do you have a hot water meter in the apartment?" in terms of the management form of the house, n = 437

Visualization of this issue in the context of city districts determined that the smallest number of apartments without meters was in Khortytskyi (0%) and Zavodskyi (4%) districts (see Fig. 12). The largest in Voznesenivskyi (19%), Shevchenkivskyi (17%) and Dniprovskyi (15%) districts.

Modernization of the centralized hot water supply system. Modernization of hot water supply systems involves two directions: 1) improvement of technical equipment for centralized water supply and 2) deployment of alternative options of hot water supply [1]. The result of modernization in any direction is that the consumer has reliable and accurate information about the amount of hot water used, the ability to adjust consumption and use resources economically and reduce the cost of services.

Respondents were asked a direct question about the need to modernize the centralized hot water supply system. As can be seen from Fig. 13, 92% of respondents understand that the system of centralized hot water supply in the city needs modernization.

The second question in this block concerned the desired direction of modernization of the centralized hot water supply system. Thus, 68% of respondents consider it appropriate to overhaul the existing hot water supply system. 27% of respondents are focused on moving to alternative modernization options (see Fig. 14).

During the research, the respondents were asked to determine the purpose for which the modernization of the hot water supply system in the city should be carried out. They had the opportunity to choose up to three answers.

The obtained results (see Fig. 15) show that the modernization of hot water supply systems in Zaporizhzhia should take place to:

1) ensuring sufficient water temperature (24%);
2) savings (16%);
3) transparency of charges (14%).

Respondents provided answers about possible barriers that may arise in the process of modernizing the hot water supply system. According to the terms of the survey, they could choose up to three types of obstacles.

As shown in Fig. 16, according to the respondents, two obstacles are in the lead. Firstly, the need to attract large funds for modernization, as indicated

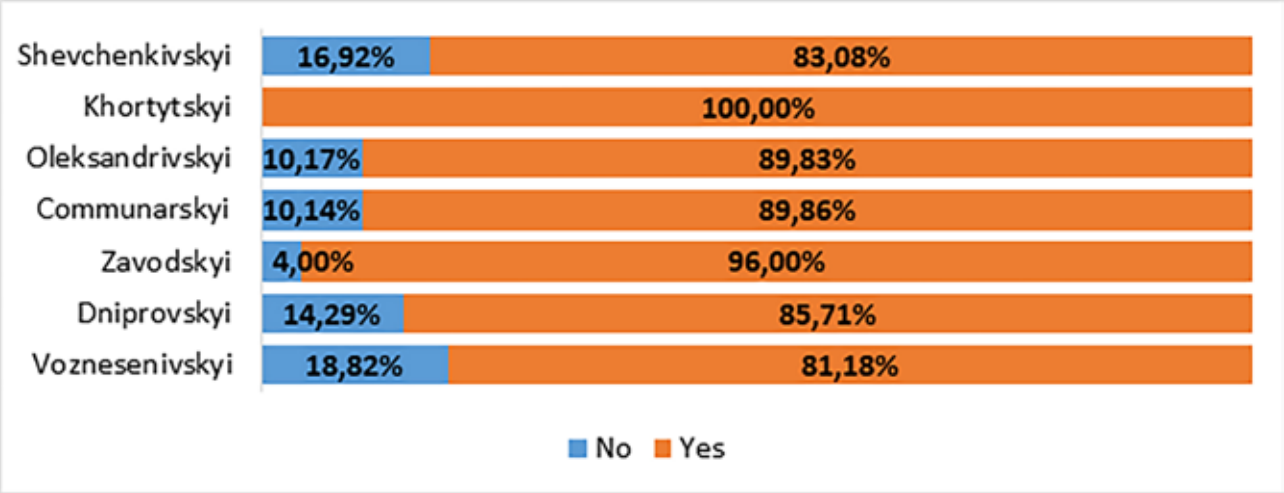

Figure 12. Distribution of answers to the question "Do you have a hot water meter in the apartment?" in terms of the district, n = 437

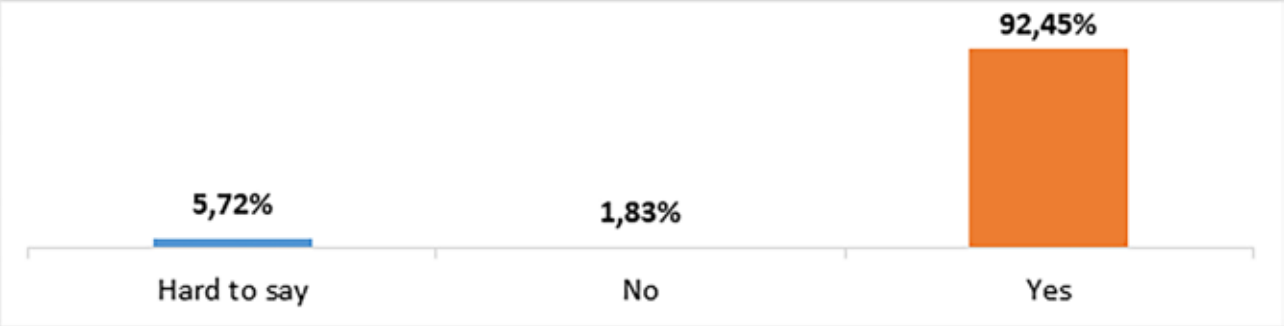

Figure 13. Distribution of answers to the question "Does our city need to modernize the hot water supply system?", n = 437

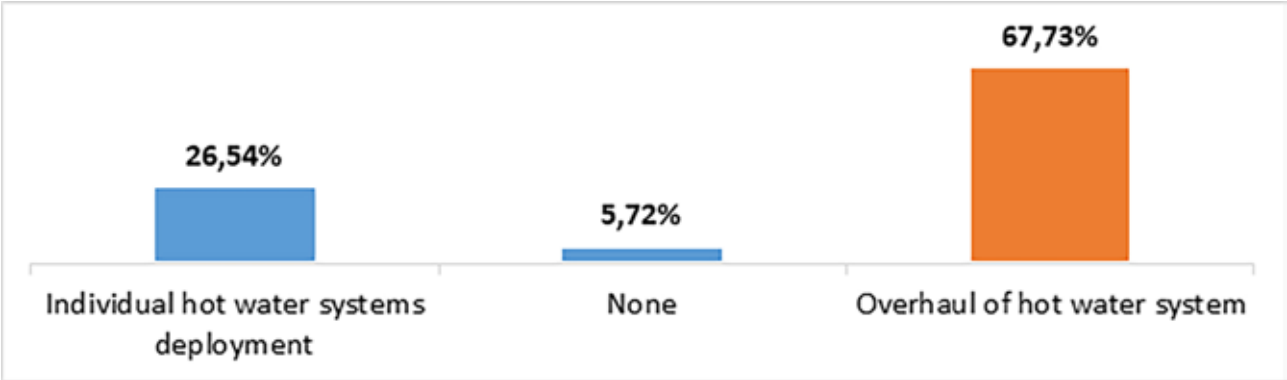

Figure 14. Distribution of answers to the question "What form of modernization of hot water supply systems should be provided by local authorities in modern conditions?", n = 437

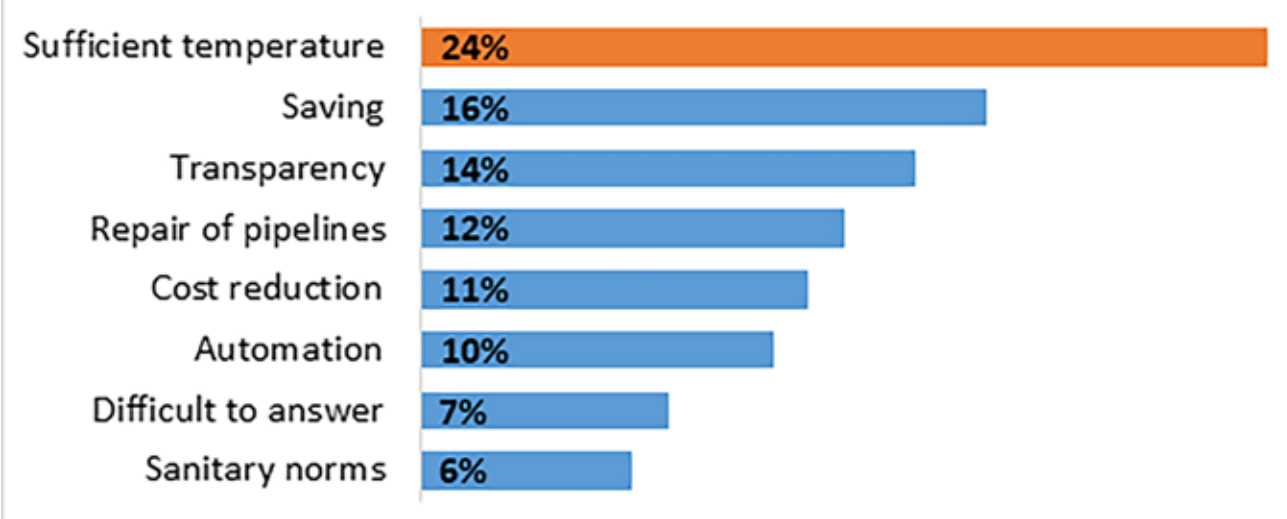

Figure 15. Distribution of answers to the question "For what purpose should the modernization of the hot water supply system be carried out in our city?", n = 437

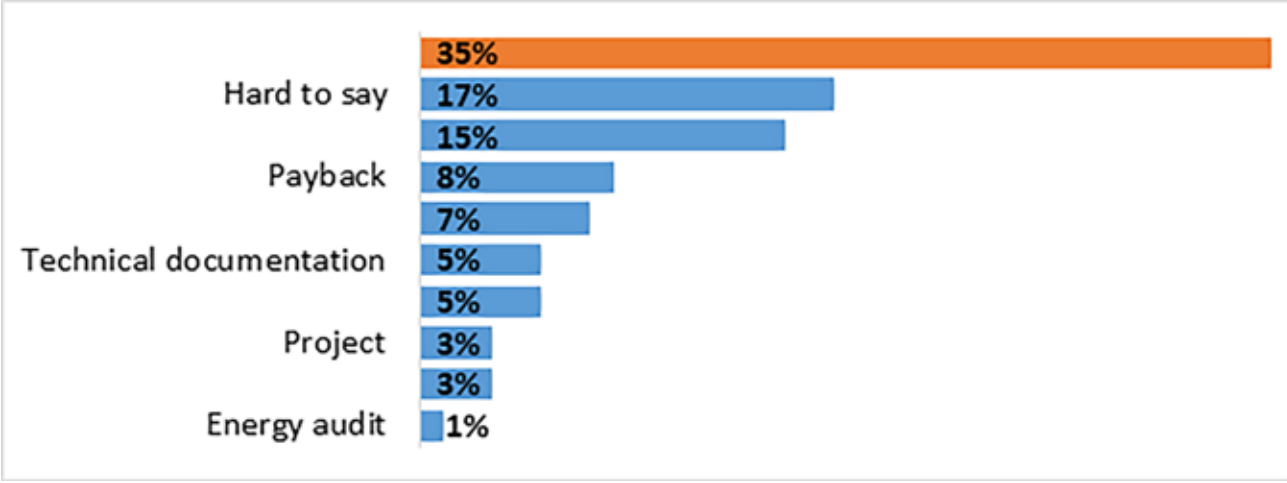

Figure 16. The main barriers in the process of modernization of the hot water supply system, n = 437

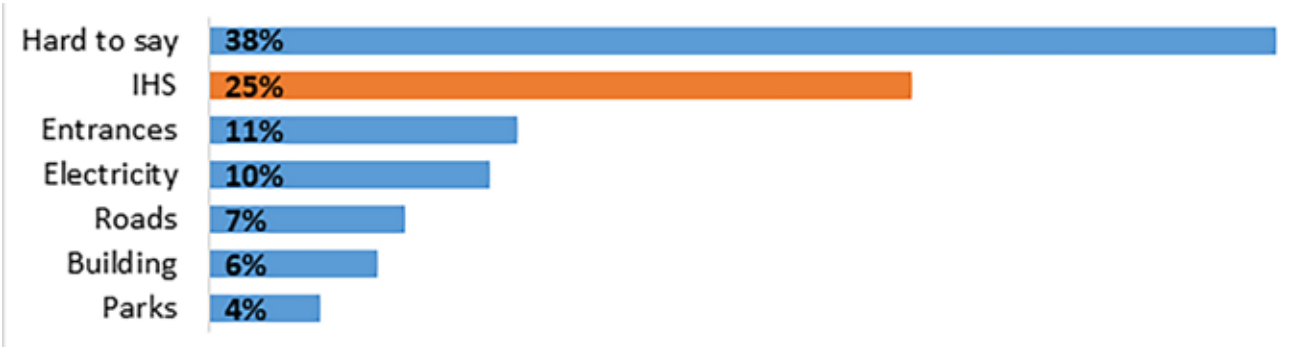

Figure 17. "If the centralized hot water supply is terminated, for what needs should the local authority direct funds in the first place?", n = 437

by 35% of respondents. Secondly, if we do not consider 17% of respondents who did not decide on the answer, 15% of respondents said that the obstacle is "the unwillingness of other residents of the house to cooperate."

Along with questions about modernization, respondents from apartment buildings without meters had to answer questions about installing a common house meter. Almost half of the respondents do not support the installation of common house meters (51%). Only 34% of respondents support this form of modernization.

Analysis of responses by district shows that the maximum level of resistance to the installation of common house meters is most likely among residents of Shevchenkivskyi district (73%). The maximum support for this measure is observed among respondents from Oleksandrivkyi district (40%).

Also, the respondents were asked about the level of awareness about the legal norm on the installation of house meters. To the question "Did you know that in case of non-installation of a common house meter, according to the law, the provision of hot water supply service to your building will be terminated?" 98% of respondents answered "I don't know".

Analyzing the answers of the respondents to the question "If the centralized hot water supply is terminated, for what needs should the local authority direct funds in the first place?" (Fig. 17), it was determined that the most appropriate is to direct the released funds to alternative options for hot water supply – 25% (IHS – individual heating system). It should be noted that almost a third of respondents could not decide on their direction of funds (38%), which indicates a lack of awareness of respondents about the financing of the centralized hot water supply system.

Conclusions. Based on the results of an empirical study of Zaporizhzhia apartment building residents' readiness for centralized hot water supply modernization, we can proceed to identify possible ways to increase its level.

1. The first and most important direction of efforts should be the development of the subjectivity of the apartment building residents, because it is impossible to solve common problems of such buildings in case of unity absence of their inhabitants. The development of the subjectivity of the apartment building residents at this stage of Ukraine's development is an effective tool to compensate the loss by the Ukrainian state of its paternalistic functions, including social security [10, pp. 331–332]. Formally, the residents of such buildings must strive for obtaining an official legal status as OSBB (union of apartment building residents).

It should be noted that an adequate legal framework, qualified civil servants or financial resources are not enough to create the relevant associations. First of all, in order to acquire legal status of OSBB, residents must develop their "citizen-citizen" activity skills or turn to life actor [6 7].

2. The second direction of efforts concerns local authority. According to V. Pilipenko and Y. Privalov, there are three strategies of local government in this context. First, the government must shape public opinion, manage it in accordance with the goals and objectives of the state. Second, the government must ensure the selection and placement of personnel in accordance with the paradigm of modernization. Third, the government should organize events, not just move downstream [8, p. 179].

In the process of increasing the level of social interaction between the community and local authorities, an important role should be played not only by analyzing citizens' practices aimed at influencing government decision-making, but also by analyzing government practices "towards public initiatives". It is this "other side" that forms the institutional conditions for the successful development of active citizenship practices that find a response at the local government level [5, p. 55].

There is a significant amount of work in this direction, but all of them relate to issues such as accountability and transparency of government, corruption, seizure of power, seizure of business, etc., which is the subject of other studies.

3. Finally, the third direction concerns the fact that local authorities should understand

that the interaction of community and local government is impossible without the participation of intermediaries, social organizers, which in the European scientific tradition are called social technicians [13, p. 61].

Despite the fact that in Ukraine there is still no social organizer as a profession and type of activity, the functions and relevant competencies of these specialists, in one form or another, are formed by specialists in the social and humanities studies – lawyers, sociologists, managers, social workers and political scientists. All of them have a sufficient level of knowledge on the initiation, coordination and implementation of socially oriented projects with existing theoretical and practical experience in management and social management.

Institutions of higher education, which train relevant specialists, have a great influence in this regard. For example, Zaporizhzhya National University has been training sociology bachelors in mediation and criminology specialty several years in a row. The purpose of the educational program is to train professionals capable of resolving social conflicts and contradictions in the field of social production, preventing crime, destructive social relations in social groups, communities and society as a whole, capable to increase the level of social cohesion and interaction, both at the local, regional and national levels [12].

In general, it makes no sense to repeat that the level of activity of city residents and their self-organization opportunities are the key to effective development of the city. The main obstacle to the modernization of hot water supply systems is the need to attract large financial resources. The second – is the unwillingness of apartment building residents to cooperate. One of the ways to solve the problem is to provide a quality information campaign to raise public awareness of:

– financial capabilities for apartment buildings;
– better practices of project activities of OSBB buildings.

Respondents' answers are dominated by negative assessments of the quality of the hot water supply service, the supplier and the level of information about the services provided by the supplier. Thus, it is necessary to develop a strategy of advertising and information campaign of local government to ensure an effective policy of forming public awareness of the problems of hot water supply in Zaporizhzhia.

The research results suggest that apartment building residents of Zaporizhzhia city show a very low level of awareness of the problem. Despite this, every condominium resident understands the feasibility and need to modernize the existing hot water supply system.

However, modernization of the hot water supply system will be successful if local authorities provide:

– proper informational and explanatory campaigns among the apartment building residents;
– contribute to the further transformation of apartment buildings into its legal form OSBB.

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Summary

Kudinov I. O., Serheieva K. M., Klymenko A. O. **Readiness of apartment building residents for hot water supply modernization in Ukraine.** – Article.

Features of social and institutional readiness of residents of apartment buildings (condominiums) for reforms of centralized hot water supply in Ukraine are analyzed. The paper represents results of social survey research of residents of apartment buildings in Zaporizhzhia (Ukraine). The methodological basis of the research is generally scientific and special sociological methods of scientific cognition. The research determines socio-demographic and institutional characteristics of centralized hot water supply services consumers in Zaporizhzhia, the level of interest in the preservation and modernization of centralized hot water supply system in the city, the level of readiness of apartment building residents for collective responsibility for the consumption of hot water supply services and strategies for modernization of the centralized hot water supply system. Research results identified possible ways to increase apartment building residents' readiness for modernization: 1) development of the subjectivity of the apartment building residents, because it is impossible to solve common problems of such buildings in case of unity absence of their inhabitants; 2) increasing the level of social interaction between the community and local authorities; 3) develop institute of social organizers (social technicians). Research results suggest that condominium residents of Zaporizhzhia show a very low level of awareness in the field of housing legislation and the condition of their own buildings and the fact that every such resident understands the feasibility and need to modernize the existing hot water supply system. The main obstacle to the modernization of hot water supply systems is the need to attract large financial resources. The second – is the unwillingness of apartment building residents to cooperate. One of the ways to solve the problem is to provide a quality information campaign to raise public awareness of: financial capabilities for apartment buildings; better practices of project activities of OSBB buildings.

Key words: centralized hot water supply, modernization, apartment building, social planning, actor, social organizer.

Анотація

Кудінов І. О., Сергєєва К. М., Клименко А. О. **Готовність мешканців багатоквартирних будинків до модернізації гарячого водопостачання в Україні.** – Стаття.

Проаналізовано особливості соціальної та інституційної готовності мешканців багатоквартирних будинків до реформ централізованого гарячого водопостачання в Україні. У статті представлені результати соціального опитування мешканців багатоквартирних будинків м. Запоріжжя (Україна). Методологічну основу дослідження складають загалом наукові та спеціально-соціологічні методи наукового пізнання. Дослідженням визначено соціально-демографічні та інституційні характеристики споживачів послуги централізованого гарячого водопостачання міста Запоріжжя, рівень зацікавленості у збереженні та модернізації системи централізованого гарячого водопостачання міста, рівень готовності мешканців багатоквартирного будинку до колективної відповідальності. на споживання послуг гарячого водопостачання та стратегії модернізації системи централізованого гарячого водопостачання. Результати дослідження визначили можливі шляхи підвищення готовності мешканців багатоквартирних будинків до модернізації: 1) розвиток суб'єктності багатоквартирних будинків, оскільки неможливо вирішити загальні проблеми таких будинків у разі відсутності єдності їх мешканців; 2) підвищення рівня соціальної взаємодії громади та місцевої влади; 3) розвивати інститут соціальних організаторів (соціальних технологів). Результати досліджень свідчать про те, що мешканці багатоквартирних будинків міста Запоріжжя демонструють дуже низький рівень обізнаності у сфері житлового законодавства та стану власної забудови та той факт, що кожен такий мешканець розуміє доцільність та необхідність модернізації існуючої системи гарячого водопостачання. Основною перешкодою на шляху модернізації систем гарячого водопостачання є необхідність залучення великих фінансових ресурсів. Друга перешкода – небажання мешканців багатоквартирних будинків співпрацювати. Одним із шляхів вирішення проблеми є проведення якісної інформаційної кампанії для підвищення обізнаності населення щодо фінансових можливостей багатоквартирних будинків та кращих практик проектної діяльності на рівні багатоквартирних будинків.

Ключові слова: централізоване гаряче водопостачання, модернізація, багатоквартирний будинок, соціальне планування, суб'єкт, соціальний технолог.