Energy consumption is the most important strategy for improving economic efficiency and decarbonization. State energy saving measures aimed at promoting changes in sustainable habits and procedures can significantly save energy consumption. Information support for promoting the economic benefits of energy saving under the conditions of military conflicts needs more attention.

The leading methodological tools were the methods of observation, comparison, as well as historical method.

The research reported here showed that the aggression on the part of the Russian Federation required states to urgently improve the system of implementation of national information policies in order to increase the level of energy saving and energy efficiency. The EU's plans to reduce energy consumption "Play your role" and "Save energy" are aimed at informing the public about the need to contribute to energy saving processes. It is proved that currently in the EU, 80 % of member states ensure the effective implementation of new state campaigns for information support to promote the economic benefits of energy saving. Awareness-raising campaigns such as EPAH, I Have Influence, Green Ambassadors, EU4Energy's energy awareness campaign in collaboration with EU NEIGHBORS east are noteworthy. This activity and the set of energy labeling measures ENERGY STAR and EPREL can become the basis for the implementation of public education programs at educational institutions during the period of military instability in Ukraine. A promising vector of further scientific research will be the analysis of the practice of implementing information support to popularize the economic benefits of energy saving on the territory of Ukraine during the aggravation of the military conflict on the territory of the state

Keywords: information support, renewable sources, energy saving, promotion of energy awareness, military aggression, energy poverty

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IMPROVEMENT OF INFORMATION SUPPORT TO PROMOTE THE ECONOMIC ADVANTAGES OF ENERGY SAVING UNDER THE CONDITIONS OF MILITARY CONFLICTS

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1. Introduction

Global energy consumption has reached unprecedented levels over the past century due to population growth and economic growth. Significant transformations have taken place in the global energy sector aimed at reducing greenhouse gas emissions and air pollutants. Many countries around the world began to introduce electrical technologies as an alternative to fuel economy, integrate renewable sources, and optimize consumption [1]. Therefore, the need for energy saving and energy efficiency reasonably arose [2] – a set of directed actions, the result of which should be the achievement of progressive effects of rational and efficient use of energy resources [3]. Energy saving has attracted the attention of global institutions and entered international, national, and business strategies [4].

Without a rapid change in policy and practical measures, global energy consumption, for example, for lighting, will increase by 60 % by 2030, which will also lead to an increase in CO_2 emissions [5]. Solving the problem of climate change should be considered as a fundamental problem that requires a deep understanding of psychological processes. Such processes are associated with both pro-ecological behavior and lifestyle in general, as well as with human energy consumption in particular [6].

Human behavior becomes an important factor that affects the operational characteristics of the building and energy consumption [7]. In this sense, the availability of information will necessarily influence the adoption of individual decisions regarding participation in energy saving activities. Lack of awareness of business entities about the benefits of energy-saving projects is one of the main factors restraining investment in the studied area [8]. A common political tool, which is used against imperfect information, is campaigns aimed at improving household decision-making by eliminating knowledge gaps [9]. Energy education of the younger generation, a high level of awareness in the field of energy efficiency, and new energy technologies is crucial for the future of the whole world [10].

Energy efficiency can also be a protection against the uncertainty associated with fluctuations in energy prices, es-

pecially during times of military conflicts. The need for rapid actions aimed at improving energy efficiency has become most urgent as a result of the full-scale invasion by the Russian Federation of Ukraine in 2022. This has drawn attention to the demand for energy of both governments and the public in many countries around the world. The demand for energy services has encouraged consumers to urgently make a choice between converter devices and passive systems to achieve the desired result [11]. Each participant in the process of production and consumption of energy resources in difficult conditions should be urgently informed about current actions on energy saving. This will increase the efficiency of the energy system as a whole and obtain personal benefits [12].

2. Literature review and problem statement

The choice of research topic is correlated with modern vectors of scientific search for representatives of the doctrine in different states. The leading toolkit and basis for the article was the study, which focused on the principles and methods for the implementation of essential procedural tools of information policy. This policy concerns raising public awareness in the field of energy saving in the period of globalization, innovative technologies, and aggravation of crisis situations [13]. The advantages, disadvantages, and justifications for the use of specific information tools were evaluated in detail. A number of problems in the field of energy efficiency were also identified and options for their solution were proposed in the form of recommendations. However, the accompanying benefits of energy efficiency were not emphasized in terms of the presence of external effects, such as military conflicts. A significant influence on the formation of the authors' position on the studied topics had a comprehensive analysis of the extent to which European governments adhere to modern energy efficiency strategies [4]. A systematic analysis of the documents of all available European national plans for energy and climate, long-term strategies was made. However, the consideration of regulatory instruments to reduce energy demand during military conflicts was not given due attention.

In turn, the international practice of improving the development of energy efficiency is investigated, the directions of public administration in the field of energy saving are summarized [3]. This played a significant role in the formation of the authors' conclusions. At the same time, considering the state instruments of energy efficiency, there was no focus on promoting energy efficiency during crisis situations. The study took into account improvements in the field of popularization and the formation of a holistic understanding of the need to implement projects and programs for energy efficiency and energy saving at all stages – production, transportation, and consumption of energy resources [8]. However, when considering energy saving projects, no emphasis was placed on the impact of armed conflicts on the relevant implementation.

Special attention should be paid to scientifically based results on the importance of specific factors necessary to achieve efficiency in conducting information campaigns on energy saving [9]. It was also useful to consider the essence of the reasons for the delay in increasing the level of energy saving at home, the lack of knowledge of the relationship between household characteristics and energy consumption [14]. However, no attention is paid to the obligation of energy saving in the residential sector during crisis situations such as military conflicts. Scientific works emphasize the need to develop energy literacy in the system of preschool education [12] and in primary and secondary school students at the cognitive, emotional, and behavioral level [15].

During the formation of the authors' position, it was emphasized the need to improve the strategies and measures of the EU energy and climate policy, which should be aimed at improving energy efficiency in various sectors [11]. The position regarding the transformation of the leading directions of the innovative approach to the processes of achieving sustainable economic and financial development and the simultaneous reduction of greenhouse gas emissions through energy efficiency and energy saving was also influenced [2]. Such relevant vectors as innovation (novelty), objectivity, subjectivity, purposefulness, demand, implementation in practice, efficiency were outlined.

However, an active study of the chosen issues confirms the fact that the improvement of information support for the popularization of the economic benefits of energy saving under the conditions of military conflicts is not given special attention in the achievements of scientists. For the most part, representatives of doctrine and practice covered the topics studied in the article in fragments. Moreover, the armed aggression of the Russian Federation has qualitatively changed the context of popularization of energy saving. Therefore, it is urgent to conduct research on new criteria of scientific research.

3. The aim and objectives of the study

The purpose of the study is to identify the improvement of information support for the promotion of economic efficiency of energy saving in the context of military conflicts. This will make it possible to increase the efficiency of energy consumption under the conditions of hostilities by conducting an information policy among the population and other energy consumers regarding economical use, the use of energy-saving technologies, and the reduction of environmental damage.

To accomplish the aim, the following tasks have been set:

– to summarize the main legislative initiatives in the field of energy saving in the context of military conflicts on the example of the European Union;

– to reveal the components of improving information support for promoting the economic benefits of energy saving in the context of military conflicts in the EU countries;

– to outline the state policy in the field of energy saving (in general and during the war) and to reveal the directions of implementation of information measures to raise awareness among energy consumers in Ukraine.

4. The study materials and methods

The object of the study is information support for the popularization of the economic benefits of energy saving under the conditions of military conflicts.

The effectiveness of scientific research is due to the approbation of practical and methodological tools, which are reflected in the research architectonics shown below (Fig. 1).

The leading hypothesis of the study is the concept of a possible development of a plan for the national popularization of the economic benefits of energy saving on the basis of positive developments of European countries.

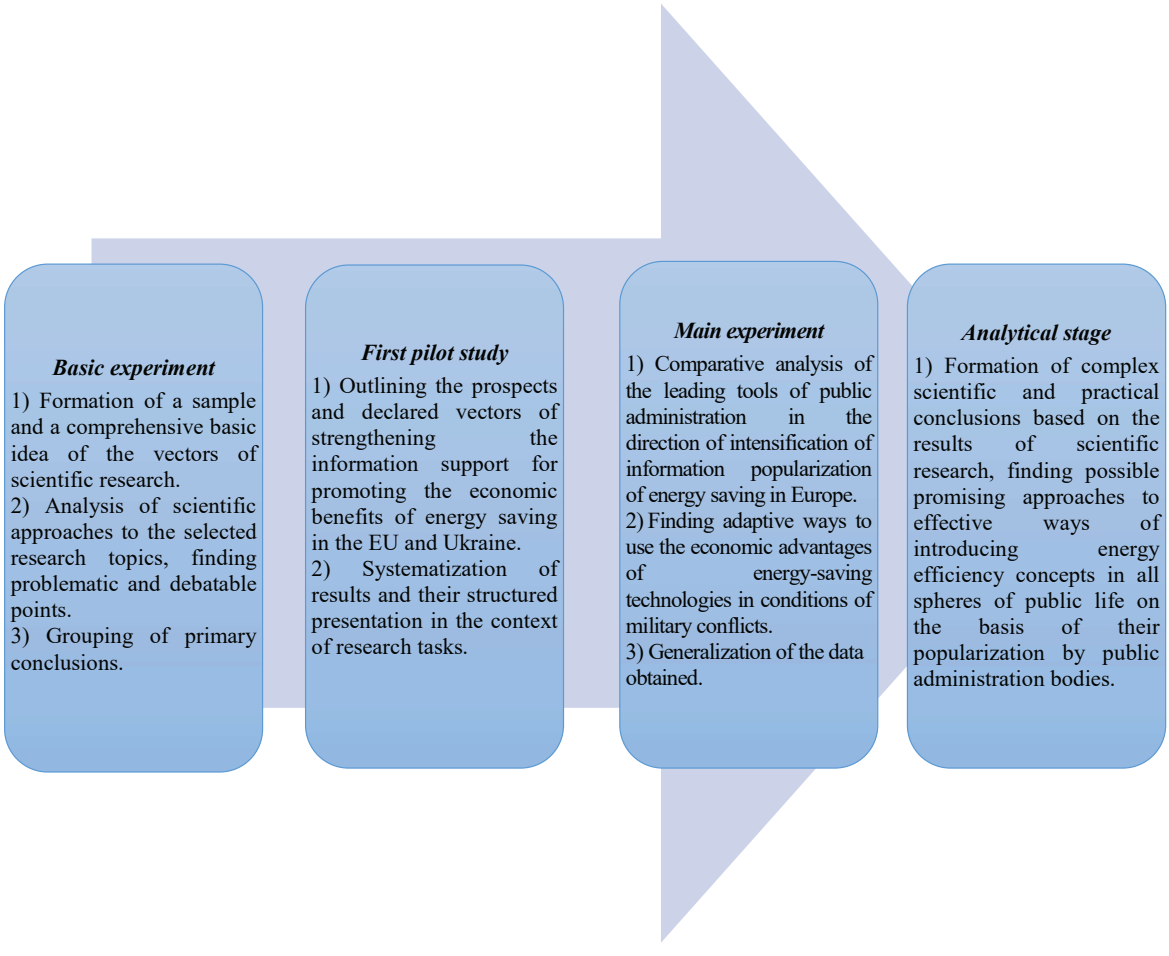

Fig. 1. Architectonics of Research

Outlining the value characteristics of energy saving and methods of information support to popularize the approaches launched in the EU became possible thanks to the leading practical method of scientific research – observation. This method was tested during the sectoral analysis of the means of improving the information work of public administration bodies on the vector of intensification of the introduction of energy saving under the conditions of military conflicts. The method of observation became an effective toolkit in the architectonics of research and served to develop a stable authors' position on the subject of the article. It will also be useful during further research of the selected vector of scientific research.

It was thanks to the method of comparison that it was possible to reveal the most effective information practices in Europe, which make it possible to increase the economic benefits of energy saving and popularize them. At the same time, during the analysis of the sample, the comparison method was also used, which made it possible to highlight the distinction between the variable means of information support for promoting the economic benefits of energy saving. It also helped to design the most positive changes for the future in the context of intensifying work on the implementation of the most successful European experience.

The historical method was useful in a comparative analysis of the growing popularization of energy saving throughout Europe over the past 30 years. This method made it possible to unleash the economic potential for further implementation of energy-efficient technologies in the context of military conflicts and active actions of states to overcome energy poverty.

The above tools made it possible to highlight the authors' view on the possibility of introducing new approaches to information publicity of the introduction of innovative technologies in the energy sector, to predict the results of such active state policies.

System analysis was used to analyze the totality of means of popularizing economic preferences; structural and functional analysis helped to reveal the interrelationship and interdependence of discretion of the powers of public administration bodies and information support for the intensification of the processes of implementation of energy saving concepts. The institutional method was used to reveal the competence characteristics of representatives of territorial communities and their interrelation with targeted programs to overcome energy poverty. The use of the formal legal method contributed to a comprehensive study legal texts that are the key to reforming and strengthening the proposed measures to strengthen the popularization of energy efficiency in the context of military conflicts. The modulation method was also used to form a project view of the prospects for updating approaches to strengthening the capacity of European states to overcome the energy crisis caused by military conflicts.

A solid empirical base was analyzed. Of particular importance was the disclosure of the debatable aspects of the introduction of the latest practice of strengthening the capacity of states to protect against energy terror and the analysis of statistical information.

5. The results of the study of information support for the popularization of the economic benefits of energy saving under the conditions of military conflicts

5. 1. Legislative initiatives in the field of energy saving in the context of military conflicts on the example of the EU

Military conflicts require urgent adaptation of legal laws and regulations, policies of economic incentives. Public policy should support the most energy-efficient products on the market, make them affordable and expand their application. Governments need to adopt appropriate laws and regulations to guide energy conservation management work, set appropriate standards and goals. Supervision of energy saving management work should be strengthened, one must formulate measures to encourage and reward companies that have succeeded in energy saving. Currently, the integration of supply and demand should be modernized to support the relevant goals in the energy saving sector.

At the technical level, it is necessary to use devices and equipment with low energy consumption; energy-efficient technologies for energy generation and transportation, thermal insulation of buildings; replace fossil energy sources with renewable ones. Property owners should strengthen supervision of energy saving, regularly audit the energy consumption of the building, objectively assess the state of energy consumption, and monitor the implementation of energy saving management. For its part, in the context of military conflicts, the government should improve the mechanism of cooperation in order to balance the interests of all parties and adopt a reasonable payment regime. It is necessary to develop user awareness of energy saving, limit their wasteful methods and encourage timely energy savings.

The war in Ukraine demanded from the state the necessary measures for the energy intensity of buildings. During 2020, building codes for energy consumption were developed in 80 countries of the world [16]. Thanks to emission reduction policies and government incentive programs, investments in improving the energy efficiency of buildings in 2020 increased by 11 % compared to 2019, reaching almost USD 180 billion. Additional and stricter minimum energy efficiency standards (MEPS) for household appliances, the transition to more efficient heating technologies have become important, such as heat pumps. It is worth noting that the total fleet of heat pumps reached 180 million units in 2020 compared to 100 million in 2010. However, there is still a high level of energy consumption of buildings in which many power systems are installed, such as hot and cold water supply systems, fire extinguishing, lighting, air conditioning, heating, etc. The share of households with access to cooling of premises worldwide increased from 27 % in 2010 to 35 % in 2020 [16]. The energy intensity of the building sector should decrease by almost five more times over the next 10 years, to meet the zero-emission scenario by 2050. In addition, the traditional use of solid biomass, which is inefficient and linked to an estimated 2.5 million premature deaths due to indoor air pollution, should be completely phased out by 2030. As a result, Development Goal No. 7 will be achieved [17], which provides access to low-cost, reliable, sustainable, and modern energy sources for all.

The European Union and its member states have committed themselves to reducing greenhouse gas emissions by at least 40 % by 2030. This should be done while increasing energy efficiency by at least 32.5 % and spreading renewable energy sources by at least 32 % compared to the benchmark level of 1990 [18]. Energy rehabilitation of the construction sector is necessary to achieve the EU's goals of climate change mitigation, as buildings account for approximately 40 % of final energy consumption and 36 % of CO_2 emissions in the EU [19]. In December 2021, the European Commission published its proposal to revise the Building Energy Efficiency Directive (EPBD) under the Fitfor55 package [20]. It updates the existing regulatory framework for energy efficiency, to reflect higher ambitions and more pressing needs for climate and social action. At the same time, EU countries are given the flexibility that is necessary to take into account the differences in the fund of buildings in Europe.

Given the uncertainty over the supply of oil and gas from Russia to Europe caused by Russia's aggression in Ukraine, the EU needs to accelerate steps to diversify its supplies and increase energy independence [21]. The rules of the gas market were revised in the European Parliament in the form of a «package of gas markets and hydrogen» [22], which includes a proposed revision of gas regulation and the EU gas directive. If the supply of natural gas from Russia is stopped, liquefied natural gas will play a key role [23]. In August 2022, the Council of Europe adopted a resolution on the voluntary reduction of demand for natural gas by 15 % in the period from August 1, 2022, to March 31, 2023 [24].

Key policy tools at the EU level include a revision of the Renewable Energy Directive. The European Commission proposes to increase by 2030 the share of renewable energy sources, such as biomass, wind, or solar energy, from the current 32 % to 45 % of final energy consumption [25]. However even with a higher share of renewables, EU countries are likely to require flexible, non-renewable power generation capacity to cover long periods without wind or sunlight.

In order to rapidly reduce demand for Russian oil and gas, the EU also needs to reduce overall energy consumption. It was proposed to increase the EU's mandatory energy efficiency target from 9 % to 13 % compared to the baseline scenario of 2020. The plan, called REPowerEU [26], is a response to the difficulties and disruption of the global energy market caused by Russia's invasion of Ukraine. It is designed to reduce imports of Russian fossil fuels by two-thirds by the end of the year and eliminate it long before 2030 by diversifying gas supplies and accelerating the transition to a «green» course. The European Commission, in cooperation with the International Energy Agency (IEA), has launched a 9-point plan «I play my role» to reduce energy consumption in the EU. Voluntary reduction of unnecessary energy consumption and accelerated measures to improve energy efficiency will lead to a reduction in the volume of gas and oil shortages in case of violation of contracts for the supply of fuel from Russia. This decision is a critical component to stabilize markets and prevent further price volatility. Such short-term energy saving measures can provide a 5 % reduction in demand for gas (about 13 billion m^3) and oil (about 16 million tons) [27].

The war in Ukraine leads to global consequences in which billions of people face the greatest cost-living crisis in the last generation [28]. In 2020, about 36 million people in the EU (8 % of the population) were unable to provide sufficient heating for their homes [29]. Moreover, about 6 % of the EU population were indebted on utility bills, and almost 13 % lived in housing with leaks, dampness, or rot in 2019. The European Committee of the Regions (CoR), in its opinion of April 28, 2022, stressed that urgent climate and energy

policies should not affect vulnerable households [30]. Member States should make full use of support measures, such as reducing VAT rates for high-efficiency heating and thermal insulation systems in homes. Other energy pricing measures are also needed that encourage the transition to heat pumps and the purchase of more efficient appliances [26].

Providing targeted information is crucial for EU citizens in a difficult period for states. The Energy Poverty Advisory Centre (EPAH) is the EU's central platform for experts on energy poverty. As well as for authorities and stakeholders seeking to eradicate energy poverty [31]. Measures to promote energy saving in the EU are summarized in Fig. 2.

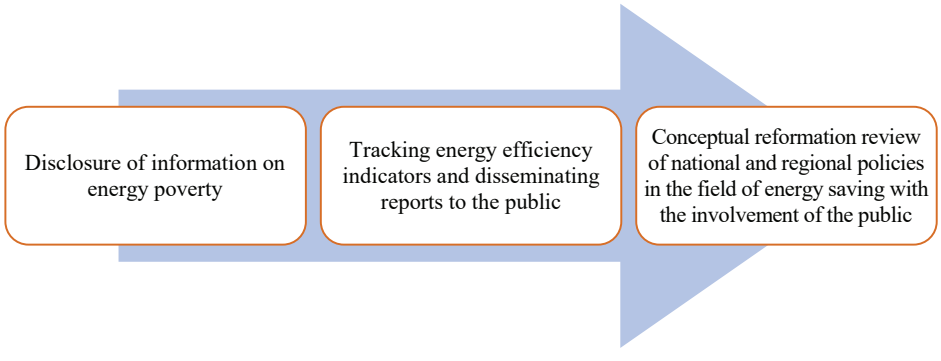

Fig. 2. Leading measures to promote energy saving in the EU

Thus, EPAH ATLAS – an interactive online database – contains information about local and international projects and measures to address energy poverty around the world. Online courses and training materials for expanding knowledge and capacity building in the field of energy poverty have proven useful.

5. 2. Components of improving information support to promote the economic benefits of energy saving in the context of military conflicts

In the EU countries, after the outbreak of the military conflict in Ukraine, a large-scale action began to encourage the population to save energy, given that by the end of the year it may be necessary to ration fuel. Regions and cities help in the development of energy saving measures, taking into account local conditions. Local authorities, through local, regional, and national energy agencies, the Covenant of Mayors, and the Mission of 100 climate-neutral and smart cities, are designed to play a key role. With the help of the media, they implement awareness-raising and support schemes, energy audits and energy management plans, set saving goals and ensure citizen participation.

Thus, in early July 2022, Germany adopted a plan to turn off hot water in offices and maintain the air temperature in winter no higher than 20 degrees [32]. The Bavarian city of Augsburg has turned off its fountains, darkened the facades of public buildings at night and is discussing the shutdown of some low-use traffic lights. A housing cooperative in Dresden announced the restriction of hot water at certain times of the day. In Berlin, in such premises as warehouses, technical premises, corridors, the temperature will vary maximum from 10 °C to 15 °C. Limit values were proposed for heating and air conditioning – at the height of summer to keep heating not higher than 19 °C, and air conditioning – not lower than 26 °C. The heads of large supermarket chains in France have entered into a voluntary agreement that from October 15, 2022, all stores will use energy-saving methods. These include disconnecting electric signs during closing, reducing light use, and regulating temperature in stores. Italy announced a decision to limit the heating and cooling temperature in public buildings [33]. In schools and other public buildings in Italy, it is forbidden to install air conditioners at temperatures below 25 °C, which is a call for citizens to help the country avoid the energy crisis exacerbated by the war in Ukraine. The rules came into force on May 1, 2022, and will be valid until March 31, 2023, while the heating temperature in public buildings in winter cannot exceed 19 °C.

Advertising in newspapers, programs and social networks highlights an information campaign that focuses on general messages about the effective use of energy at home and minimizing trips in your own car. For example, the Belgian government launched the "I have influence" campaign [34] aimed at achieving short-term energy savings in view of the crisis in Ukraine. A radio clip is broadcast on the main national channels, and the website supports the state campaign. The government proposes that the population reduce heating by 1 °C, which can lead to savings of up to EUR 240 per year. It is proposed to heat only living rooms, switch heating to night mode 1 hour earlier, install heating 1 hour before bedtime, 1 hour before leaving the house at 15 °C. It is also recommended to pay attention to the labeling of energy when buying electrical appliances, to defrost the freezer when frost appears, since its layer with a thickness of 2 mm consumes 10 % more energy per year. Moreover, advice is given on installing the freezer in the room since the energy consumption of the freezer depends on the difference with the outside temperature. For short distances, it is proposed to ride a bicycle or walk. For long journeys, it is proposed to use a bus, tram, subway, or train, not a car. It is advisable to choose economical driving, as when driving on the highway at a speed of 100 km/h. Instead of maximum speed, you can reduce fuel consumption by about 10–15 %. When heating food, use a microwave oven, which consumes 4 times less energy than an induction or gas stove, to cook food on an induction cooker. Regarding investments, the Belgian government indicates that a well-insulated house saves up to 30 % of energy. In this connection, benefits for demolition and reconstruction were introduced. VAT has also been reduced to 6 % for solar panels, heat pumps, and solar water heaters until December 31, 2023. The Belgian government has also made available at the regional level a number of bonuses for reconstruction and energy saving for the population.

EU Member States recommend considering additional tax measures. These include reducing and exempting vehicles for both the purchase and use of electric and hydrogen vehicles. Special attention should be paid to the reduction of tax deductions that are associated with energy saving and the phase-out of environmentally harmful subsidies.

The main of the listed vectors of actions of state bodies in the field of ensuring a high level of energy saving in the EU are shown in Fig. 3.

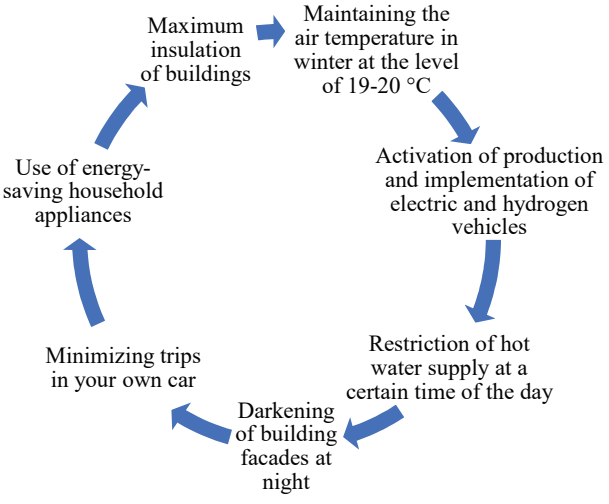

Fig. 3. Vectors of actions of state bodies in the field of ensuring a high level of energy saving in the EU

Information actions can also be supported by the inclusion in school curricula of certain courses related to energy saving. The international course on promoting energy saving and energy efficiency "Green Ambassadors in the Community", which combines activity and social involvement, has become widespread in many countries of the world, including in the EU countries [35]. Its peculiarity lies in the presence of two parts – theoretical and practical. The theoretical part of the training involves students who receive information about electricity production, energy efficiency, renewable energy, waste, and recycling. Students get acquainted with the methods of teaching, the features of drawing up a lesson plan. In the practical part of the course, students teach students in the fourth and fifth grades of secondary schools. The course focuses on learning through experience, and so learners learn about environmental topics through experiments, demonstrations, and interactive quizzes. The result is the fact that students and schoolchildren consolidate the material on the need for energy saving.

An example of promoting energy saving among children in EU countries can be an awareness raising campaign organized by EU4Energy in cooperation with EU NEIGHBORS east [36]. The comic was developed within the framework of Phase II of the EU4Energy program – promoting the transition to clean energy in the Eastern Partnership countries. It is funded by the European Union and aims to develop a robust legislative and regulatory framework for energy, support the region's transition to clean energy and liberalize its markets. It is dedicated to the hamster Ozzy, one of the main characters of a new comic book about energy efficiency called "Light Bulb". The comic promotes an increased understanding of energy efficiency by younger generations and simple energy saving measures, such as turning off unused devices or turning off heating, as well as the negative impact of energy waste on nature and the environment.

An example of the implementation of high energy efficiency performance standards can be ENERGY STAR certificates [37]. This labeling program was launched in the United States and later acquired the status of an international energy efficiency standard. It is supported at the state level, helping people and organizations save money and reduce greenhouse gas emissions by identifying factories, office equipment, household appliances and electronics with high energy efficiency. ENERGY STAR devices have an average power consumption, which is 20 % less than its counterparts of equal functionality. Appropriate emblems can be seen on computer products, heating and cooling systems, new homes. The ENERGY STAR program has become an incentive for the spread of LED traffic lights, economical fluorescent lighting, as well as energy-efficient office equipment. The ENERGY STAR marking, for example, is awarded only to homes whose efficiency is at least 15 % higher than the standard provided for by the relevant state or local energy codes in this area. To assist consumers in selecting more efficient appliances, the European Commission has also launched the consumer interface of the European Registration of Products database for energy labeling EPREL [38].

5. 3. State policy in the field of energy saving and directions of raising awareness of energy consumers

The state policy in the field of energy saving in Ukraine, including during the war, is aimed at giving preference to energy-efficient measures that reduce energy demand [39]. Energy efficiency measures have a serious role in the process of all production cycles, ending with energy consumption. The state policy of Ukraine is aimed at maximizing the dissemination of information on the provision of financing in the field of energy efficiency and energy saving. Support can be provided consumers in the form of grants, subsidies, reduction of the volume of relevant loans, reimbursement of part of the cost of energy efficiency measures. The tasks of public administration in the field of promoting energy efficiency also include the implementation and maximum dissemination of information about relevant pilot projects. In this area, much attention should also be paid to encouraging changes in the mode of energy consumption in the workplace, the introduction of intelligent energy metering systems. Particular attention should be paid to the development of educational and information activities in this area.

In 2021, the State Agency on Energy Efficiency and Energy Saving of Ukraine (SAEE) concluded a number of documents with the Ministry of Education and Science of Ukraine. A special place in them is given to the organization of public events and information campaigns to promote the benefits of efficient use of energy resources in higher education institutions. The main actions of the State Agency on Energy Efficiency and Energy Saving of Ukraine in 2021 are shown in Fig. 4.

The National Energy and Utilities Regulatory Commission in Ukraine also informs the public about the economic benefits of energy saving [41]. Other state authorities constantly post information on their websites for familiarization and use on the promotion of energy saving, rational use of fuel and energy resources.

Shortly before the full-scale war in Ukraine in 2021, the National Action Plan on Energy Efficiency until 2030 was adopted [42]. It stipulates that primary and final energy consumption in Ukraine should not exceed 91.5 million tons, respectively. and 50.5 million tons of oil equivalent. The plan provides for a series of sectoral and cross-sectoral regulations to improve energy efficiency.

In July 2022, in connection with Russia's military aggression, changes were made to some laws of Ukraine to create conditions for the introduction of comprehensive thermal modernization of buildings. The goal is to adapt activities for the implementation of programs in the residential sector, including those related to the restoration of buildings destroyed and/or damaged as a result of armed aggression.

Mass reconstruction of enterprises and residential buildings will take place according to increased standards of energy efficiency. Particular attention is paid to the implementation of information support in the field of energy efficiency of buildings [43]. In July 2022, the established National Council for the Restoration of Ukraine from the Consequences of the War developed a Draft Plan for the Restoration of Ukraine [44]. According to the materials of the working group "Construction, urban planning, modernization of cities and regions of Ukraine", there is a high energy and climate vulnerability of communities in the country due to the irrational use of fuel and energy in settlements. The high energy intensity of the residential and public buildings sector threatens the energy security of Ukraine. In this connection, the draft Plan pays much attention to raising citizens' awareness of sustainable energy development of communities and regions.

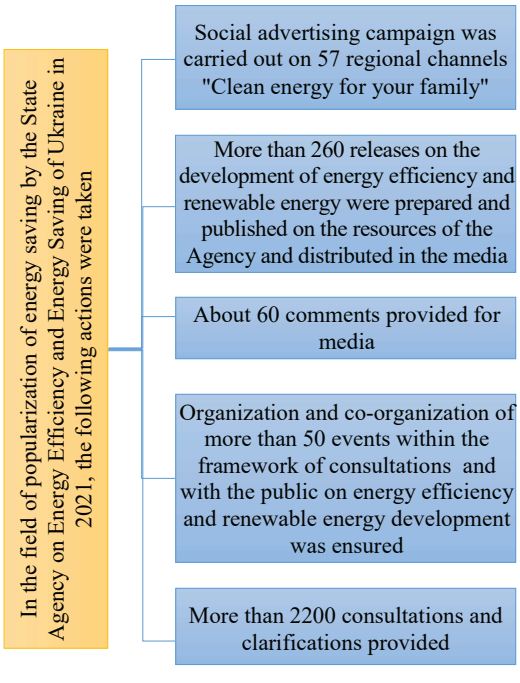

Fig. 4. Results of the intensification of public administration in the field of promoting energy saving on the example of the reporting of the State Agency on Energy Efficiency and Energy Saving of Ukraine for 2021 [40]

The program to raise awareness among energy consumers [42] was developed in accordance with the EU Directive on energy efficiency [45]. In accordance with the Directive, the government should take measures to encourage and facilitate the efficient use of energy by small energy consumers, including household consumers. Relevant tools may include fiscal incentives, access to funding, grants or subsidies, and exemplary projects. A special place is given to the implementation of information support. A number of measures related to expanding consumer access to information on the benefits of energy efficiency in Ukraine consist of the implementation of the policy of the Energy Efficiency Fund. In addition, these measures include the introduction of energy labeling and environmental design standards; measures to stimulate energy efficiency in private buildings. The main task in this area is to disseminate informing and educating end beneficiaries about the benefits of energy-efficient behavior and the importance of implementing energy efficiency measures. An example of informing consumers about the implementation of specific measures is the established Advisory Center "Removing Barriers to Promote Investments in Energy Efficiency of Public Buildings in Small and Medium-Sized Cities of Ukraine through the ESCO Mechanism".

Under the conditions of war in Ukraine, at the level of regions, concepts of socio-economic adaptation to the conditions of martial law and strategic directions of economic revival for the post-war period are being developed [46]. Attention is paid, inter alia, to monitoring at the level of territorial communities of problems that may lead to the disruption of the heating season. It is planned to take measures to prevent the problems of lack of heat in the autumn-winter period, an action plan is being worked out in case of a pessimistic energy scenario (installation of heating points, purchase of stoves and generators, harvesting firewood). During the war in Ukraine, regional military administrations constantly inform the public about measures to minimize heat loss in their homes. An example would be the popularization of the following activities: the installation of heat-reflective screens between the wall and the battery; raising curtains above the levels of heating radiators; thermal insulation of windows and doors (seal the windows with tape or adhesive tape); maximum insulation of balconies.

6. Discussion of results of the study of information support to popularize the economic benefits of energy saving under the conditions of military conflicts

It can be concluded that energy saving should provide long-term benefits by reducing overall energy demand, which will reduce the need to invest in a new production and transmission infrastructure. The above position of the authors was supported with the addition that effective control and reduction of energy consumption of buildings is becoming a global priority, especially in the realities of today [47]. The lack of energy saving management from a scientific point of view will lead to high energy consumption, resulting in serious energy losses [48].

Thus, the total amount of energy consumed is determined by how households use the product. The purpose of measures to promote energy saving or the introduction of educational programs to conserve energy at the stage of final energy consumption is for households to use products in an energy-efficient way [14]. The above provides additional confirmation of the stated arguments of the authors, summarized in Fig. 2.

One can state the need for serious research in order to find a way to save energy in the household, without exacerbating the problems of energy poverty. This is especially necessary during military conflicts. Scientists, sharing the position of the authors, emphasize that when using household energy, a scale effect is achieved. Moreover, small households consume more energy per capita. Thus, they carry a greater burden of energy consumption [14]. In addition, with an increase in the age of the consumer, energy consumption increases [49]. Single-person households that do not have sufficient pension benefits may face energy poverty in the future. Scientists conclude that campaigns to inform consumers about the benefits of energy saving should take into account in their developments the specifics of the regions, lifestyle, and weather conditions.

A deeper understanding of the key interrelationships between energy saving and the distribution of indicators

between rich and poor in both the short and long term is also needed [13]. The position proposed by the authors was specified. In particular, it is proved that the results of the assessment should be presented with a detailed description of the area, boundaries, and context (micro- or macro-region, level of economic development, demography, distribution of income, demand growth) taking into account behavioral characteristics. This is made possible by the proposed value criteria, which are crucial to ensure the highest level of effectiveness of the policy of information.

It was stated that raising public awareness of the economic benefits of energy saving, consolidating confidence in these technologies among consumers is necessary under the conditions of military conflicts to obtain relevant economic preferences for consumers. Methodological developments in the field of popularization of energy saving and energy efficiency, as well as their practical application in the field of education, are a serious support for the government's efforts in this area. In contrast to scientific work [1], where the above position was expressed in fragments, within the framework of this authentic study, the concept of energy efficiency acquired a special context, given the intensification of military conflicts. Educational activities can be the same effective tool in the implementation of energy saving and environmental patterns of behavior as state environmental policy and subsidies to households [10]. Educational tools have an impact on the direct consumer, aimed at the formation of a new consumer culture based on careful environmentally oriented behavior and a conscious choice of energy-saving measures [50]. Educational individual and collective actions to save energy and climate are very important during the energy crisis caused by military conflicts. They also transform society towards environmentally safe and sustainable development [15].

It is indisputable that the deepening of environmental and social problems, the presence of military conflicts involves the formation of sustainable consumer attitudes and behavior among households. An expression of the adoption of the principles of new ways of consumption is the search for the possibility of saving energy for households and the conscious restriction of the consumption of this good derived from non-renewable resources for the so-called "clean" energy [51]. This becomes possible due to the authors' disclosure of the value component of the popularization of energy saving, in particular, the need for consumers to obtain knowledge, up-to-date information about the trends they are obliged to follow in order to be active and motivated in matters of energy saving.

The authors' research was limited by modern realities and fragmentation of scientific developments in this subject. The above necessitated the formation of a comprehensive theoretical and applied authors' presentation on the subject of research. In addition, the dynamics of geopolitical changes prove the impossibility of forming a stable position on the issue under study. Thus, in the world as a whole, and Europe in particular, there is an intensification of military conflicts. These events qualitatively change national policies, including in matters of energy saving (Fig. 3 – in the EU countries, Fig. 4 – on the example of Ukraine), obliging states to accelerate the introduction of energy-saving technologies. However, the formed complex theoretical and applied authors' presentation on the subject of research allows one to fill in insufficiently disclosed aspects of this scientific problem. The authors' integrated approach makes it possible to qualitatively improve the information support of positive popularization of the economic efficiency of energy saving. This is explained by the generalization and actualization of problematic aspects directly in the context of military conflicts, the study of international experience and the outlining of the most important changes in the legislative support of countries in the new conditions of functioning. The above, in turn, will lead to the transformation of approaches to popularization and dynamic information support of energy saving and will become a further object of research.

As a disadvantage of the study, one can note the lack of differentiation of the above recommendations depending on regional characteristics. At the same time, the authors' works can serve as a value stable basis for further scientific development of the subject of the article in the context of aggravation of military conflicts. The development of the study should consist in analyzing the energy consumption of certain regions of Ukraine and developing scenarios adapted to their peculiarities for introducing measures to improve energy efficiency.

7. Conclusions

1. Under the conditions of the military conflict in Ukraine, the dependence of the economies of a large number of countries on imports of fuel and energy resources remains, and there are trends of corresponding sharp growth. As a result of this fact, the problem of efficient energy supply and energy saving has become relevant for industrial consumers, budgetary and commercial organizations, utilities, and ordinary consumers.

The results of the study made it possible to determine that the aggressive actions of the Russian Federation in Ukraine forced the EU countries to set urgent tasks for reforming the legislation in the field of energy saving. Against the backdrop of the ongoing energy crisis associated with Russia's war against Ukraine and the expected further rise in energy prices, energy poverty is likely to remain one of the main EU policy agendas.

Noteworthy are the activities of EPAH's information and education campaigns, «I Have Influence», Green Ambassadors, EU4Energy energy awareness campaigns in cooperation with EU NEIGHBORS east. This activity and a set of energy labeling measures ENERGY STAR and EPREL are a vivid example of improving information support to promote the economic benefits of energy saving. They can become the basis for the implementation of similar information programs in Ukraine.

2. Today's rapidly changing energy challenges force countries to direct their maximum efforts to strengthening energy security, developing the resilience of strategic autonomy. To achieve these goals, diversification of energy supply and increased energy saving and efficiency are necessary. Under the conditions of military conflicts, the level of energy saving is seriously affected by mandatory measures for energy saving, high consciousness of employees, consumers, and an advanced level of management.

Outlining the components of improving information support for promoting the benefits of energy saving in the EU countries made it possible to determine the most appropriate possibility of saving under the conditions of military conflicts. This possibility applies primarily to the sphere of heating and cooling of both public and private buildings. In this context,

the EU countries are directing efforts towards improving information support to promote the economic benefits of energy saving. This will increase consumer awareness in the following areas: restrictions on disconnection; price regulation; tax incentives; social energy tariffs; social transfers to vulnerable segments of the population. Appropriate promotion will contribute to the implementation of financial support for the repair of buildings for the energy poor; assigning subsidies for energy-efficient solutions such as heat pumps and solar panels; structural improvement of energy efficiency; development of local energy communities. Information tools include seminars, explanatory work, consulting, interactive dialogue, meetings; use of the media, the Internet; conducting discussions, trainings, presentation events, etc.

3. The characteristics of the state's policy in the field of energy saving, in particular during the war, and the disclosure of directions for the implementation of information measures to raise awareness among energy consumers in Ukraine allowed us to draw the following conclusions. The energy supply crisis associated with Russia's war against Ukraine, as well as the rise in energy prices, forced Ukraine adopt a large number of legislative initiatives aimed at improving energy saving and energy efficiency. Many efforts are aimed at improving information support to promote the economic benefits of energy saving, direct financial motivation, and responsibility.

Conflicts of interest

The authors declare that they have no conflicts of interest in relation to the current study, including financial, personal, authorship, or any other, that could affect the study and the results reported in this paper.

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Data availability

All data are available in the main text of the manuscript.

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