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The Public and Environmental Aspect of Restoring Sustainable Regional Development in the Face of the Negative Impact of Military Actions on the Territory of the Country

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ABSTRACT

The main purpose of the article is to study the features of the public and environmental aspects of restoring sustainable regional development and to form an information program of the social and environmental aspects of sustainable regional development in the face of the negative impact of military actions on the territory of the country. The research methodology includes the use of a demonstration model for graphical display of the results. Taking into account expert opinions, we systematized and identified the main steps to ensure sustainable regional development in the face of the negative impact of military actions in the context of the public and environmental component. As a result, a demonstration model of ways to ensure sustainable regional development in the face of the negative impact of military actions in the context of the public and environmental component was built. The conducted study has a limitation, since Ukraine was chosen for the study, in which, at the time of writing, the aggressive military expansion by the Russian Federation continued, the model was built under the given realities of the functioning of the regional development system. In this regard, in further studies it is planned to adapt this model to the realities of other countries of the world.

1. INTRODUCTION

Given the totality of negative influences on the planet, the question arises of the possibility of developing and implementing a qualitatively new regional environmental policy in the field of nature management, which would allow today to make far-sighted decisions, taking into account the interests of future generations. The implementation of the task is possible through the introduction of the concept of sustainable development. This issue is especially relevant in the context of the existence of active military actions, and in the situation of the impact of their negative consequences. The new conditions for the existence of people in a country experiencing the negative consequences of military actions require a fundamentally new environmental and public policy, which should be based on the requirement of mandatory observance of the environmental safety of human life and an emphasis on the consciousness of every citizen. The main goal of such a policy should be to ensure the most favorable natural conditions for life, rational use and reproduction of natural resources. The largest consumers and pollutants of the environment are enterprises, therefore, to ensure the implementation of the concept of sustainable regional development, it is necessary to form a system of economic incentives at the micro level. Economic incentives appear in the ability to advertise one's own activities through the publication of the characteristics of environmental activities that have developed in the accounting system. Thus, contractors are involved, investors and consumers are interested in the greening of human activities, and the owners of the enterprise receive additional income from the implementation of such activities. The inclusion in the economy of the enterprise of another area - environmental activities, allows you to form a more complete picture of the activities of the enterprise and makes it possible to consciously and purposefully justify and plan the adoption of managerial decisions. The deeper the understanding of the economic nature of the processes taking place in society and nature, the more opportunities to choose the most effective options for the implementation of production activities and human social behavior. Environmental problems today are global and concern the vital interests of all people on the planet. To solve them effectively, it is necessary to apply measures aimed at restructuring and improving the existing methods and theories of most sciences, including accounting. This can be realized based on the already existing experience of mankind, taking into account the trends of the current state and predicting the future.

In the current conditions, the survival dominant provokes mankind to implement measures that promote rational, far-sighted nature management. In this perspective, many scientists see a way out of the ecological crisis in a radical approximation of economic laws to the sphere of ecology. The issue of providing a mechanism for the formation and use of

environmental indicators at the state level is gaining relevance. It becomes clear that this is impossible without building an effective accounting system for environmental activities at the level of enterprises that are the main pollutants of the environment and consumers of natural resources. Ignoring the role of accounting in building and implementing the concept of sustainable development of the country, managing the environmental activities of an enterprise, reduces their effectiveness.

The concept of sustainable development has three components: environmental, economic and public. The economic component of the concept of sustainable development involves the optimal use of limited resources and the introduction of environmental - nature, energy and material saving technologies, including the creation of environmentally friendly products, minimization, recycling and destruction of waste. The essence of the economic component is to ensure the sustainable use of natural capital, that is, its "non-consumption". Based on the foregoing, the following levels of sustainability of regional development can be distinguished:

a) weak - with a constant value of natural capital, the population grows;

b) strong - a growing or stable amount of natural capital per capita.

One of the tools for implementing the economic component is accounting as an information system that provides the formation of information about the natural capital of society. Accounting records the business operations of an enterprise carried out using natural resources or leading to environmental consequences.

The public component is aimed at ensuring the stability of public and cultural systems through a fair distribution of benefits not only within one generation, but also between generations. The role of accounting in the implementation of the public component is to provide information support for decision-making on the fair distribution of benefits.

The environmental component is designed to ensure the integrity of biological and physical natural systems by maintaining the ability to self-healing and dynamic adaptation of such systems to change. An information source of the quantity and quality of natural systems at the microeconomic level can be an accounting system. Underestimation of any of the components of the concept of sustainable development can lead to negative consequences. For example, the active development of the country's economy with a weak development of environmental and public areas entails a violation of the conditions for sustainable development. After all, it is impossible to ensure the improvement of living conditions if the increase in the capacity of the economy is not accompanied by a decrease in technogenic burdens on people and the resolution of public problems in the life of society. The essence of the concept is the simultaneous development of the three components of sustainable development, that is, the growth of the economy with the improvement of the environmental situation and the solution of public issues.

The main purpose of the study is to determine the main peculiarities of the public and environmental aspect of restoring sustainable regional development and to form an information program of the social and environmental aspects of sustainable regional development in the face of the negative impact of military actions on the territory of the country. The innovativeness of our study lies in the fact that the model we have formed offers real steps to ensure the sustainable development of regions in the context of social and environmental aspects in the face of the negative impact of military operations, and taking into account.

2. LITERATURE REVIEW

The concept of sustainable development began to take shape in the 1970s, which is due to an increase in the number of scientific studies on the issues of limited natural resources and pollution of the natural environment. The theory of sustainable development is an alternative to modern concepts of economic growth, which ignores the environmental danger caused by development according to an extensive model [1-3].

Economists traditionally pay great attention to the problems of introducing the philosophy of sustainable development into the practice of public life. Over the past decades, a large number of comprehensive studies of the features, social and environmental aspects of regional development have been carried out, taking into account the national specifics of socio-ecological development and the negative impact of military operations [4, 5].

Today, the model of sustainable economic development is based on the doctrine of sustainable development, which is a set of ideas, concepts, provisions and postulates of various sciences, in particular philosophy, sociology, economics, ecology, which have already formed the basis of the documents of the UN and individual countries [6, 7].

Thus, according to Kryshtanovych et al. [8], the creation of a sustainable model for the development of regions is the most significant lever that ensures the sustainable development of the national economy in the face of any negative consequences.

In the future, theoretical studies on the idea of searching for sustainable regional development only intensified. Various aspects of the problem become the subject of scientific discussions. Economists in modern conditions focus their attention on constancy, meaning, first of all, economic and industrial growth, welfare, profit, capital accumulation. Considerable attention is also paid to finding ways to stimulate sustainable regional development in certain crisis conditions, which can come both from the outside and be of an internal nature [9, 10].

The theoretical and methodological understanding of the essence of the strategy in ensuring the viability and resilience of the regions makes it possible to transform the processes of spontaneous and intuitive search for ways of their effective development into scientifically based ones, which will become the most important condition for the restoration of the national economy after the crushing negative effects of external and internal influences [11, 12].

In a broad sense, the sustainable development strategy aims to promote harmony in society - between humanity and nature. In the context of modern development, it is necessary to reform the political system that ensures the effective participation of citizens in decision-making, the economic system that can generate innovations and new technical knowledge on an independent and sustainable basis of the social system. So, according to some scientists, it is the environmental and public aspects that are important aspects in the theory of sustainable regional development, given that they are the most sensitive to external and internal changes, and it is they who in the future can act as the most powerful boosters for the further process of regional development [13, 14].

But all studies of the environmental and public aspects of sustainable regional development mainly take into account the

facts of the stability of the geopolitical situation in the country. Unfortunately, today not all countries can fully ensure all the components of national security, and sustainable regional development must take place one way or another. Given this, an important issue today is precisely the study of features of the public and environmental aspects of restoring sustainable regional development in the face of the negative impact of military actions on the territory of the country.

3. METHODOLOGY

The structure of our methodology includes the following theoretical research methods: theoretical method of data analysis, generalization and systematization of auxiliary materials. These methods made it possible to form the basis for using the main research model: the methodology of functional demonstrative modeling.

The methodology of functional demonstrative modeling is a technology for describing the system as a whole as a set of interdependent actions, or functions. It is important to note the functional orientation of methodology of functional demonstrative modeling - the functions of the system are investigated independently of the objects that ensure their implementation. The "functional" point of view makes it possible to clearly separate the aspects of the purpose of the system from the aspects of its physical implementation.

The methodology of functional demonstrative modeling is a formalized approach to creating functional models - block diagrams of the process or system being studied. Schemes are built according to a hierarchical principle with the necessary degree of detail and help to understand what is happening in the system or process under study, what functions are performed and what relations its functional blocks enter into with each other and with the environment. The methodology of functional demonstrative modeling fundamentally cannot answer questions about how the processes in the system proceed in time and space.

The methodology of functional demonstrative modeling designed to model the performance of an object's functions by creating a descriptive graphical model showing how and by whom is done within the functioning of any object. The methodology of functional demonstrative modeling is designed to document the processes that are most important to achieving the goal used at each stage.

Thus, this methodology makes it possible to fully depict in graphic form the features of the public and environmental aspects of restoring sustainable regional development in the face of the negative impact of military actions on the territory of the country, while demonstrating all the constituent elements of this process.

Considering all the positive characteristics, in our opinion, this demonstration model will be able to fully ensure the visibility, simplicity and systematic implementation of the goal - to form an information program for the social and environmental aspects of sustainable regional development in the face of the negative consequences of military operations.

The first step in this process will be to determine the ultimate goal of implementing this model - to form an information program of the social and environmental aspects of sustainable regional development in the face of the negative impact of military actions on the territory of the country, which will be denoted as W_0.

To achieve this goal, within the framework of this model, we have formed four main steps, which are the basis for the stable achievement of the goal W_0. Within the framework of this demo model, each of the steps will be labeled W_1-W_4. It should be noted that these steps were determined by us, given that all the authors of this study have been practicing and advisory representatives of local governments of Ukraine (Lviv region), the regional development department for more than five years. In our opinion, the steps we have presented and our experience in ensuring sustainable regional development in the face of the negative consequences of military actions will be the most relevant in the example of the Lviv region in Ukraine. This is due to the fact that this area and all employees and experts of the regional development department are faced with the need to ensure sustainable regional development in the face of the negative consequences of military actions. And although there are no active military actions on the territory of this region, the infrastructure of territorial units is not as destroyed as in the East of Ukraine, this region fully feels all the military and economic consequences of the aggressive war of the Russian Federation against a sovereign country.

Thus, based on the expert survey, we will form the primary nodal model for achieving goal - goal W_0 - to form an information program of the social and environmental aspects of sustainable regional development in the face of the negative impact of military actions (Figure 1).

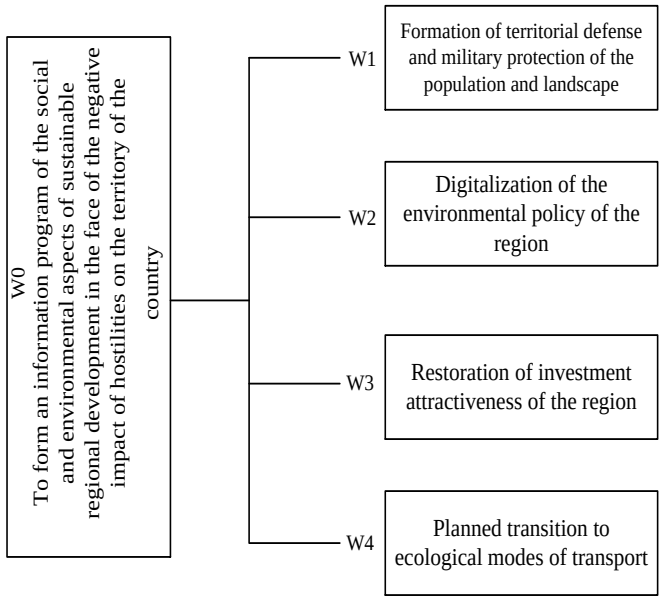

Figure 1. Primary model for achieving goal W_0

This figure is the primary stage in the implementation of the demonstration model for achieving the goal W0, it demonstrates the basic steps that are key to the entire process of forming an information program of the social and environmental aspects of sustainable regional development in the face of the negative impact of military actions on the territory of the country.

4. RESEARCH RESULTS

In order to better understand the entire process of implementing a demonstration model, it is important to identify the main elements that will be used in the process of its implementation. Therefore, the next step is the formation of

a demonstration scheme of the process of achieving the final goal W_0 with inputs (I), outputs (O), control elements (C) and mechanisms (M) (Figure 2).

As we can see from Figure 2, in the process of using this demo diagram of the process of achieving the goal W_0, all the above elements are depicted. So, the mark (I) denotes the inputs, denoting the resources necessary to achieve the goal. The list of resources may change in accordance with the change in the goals set or the change in external or internal factors of influence on the process of sustainable regional development. The following elements, indicated in Figure 2. there are mechanisms (M), which are the main tools that are used to achieve the goal. Elements (C) are control elements that serve as a methodological and practical basis for achieving the ultimate goal. The last elements are the output elements (O), demonstrating the final information result.

It should also be noted that all the demonstration models presented in the study were created using special software for creating vector diagrams and flowcharts.

The next step of our research is the formation of the main demonstration model of the formation process of information program of the social and environmental aspects of sustainable regional development in the face of the negative impact of military actions, which accumulates all the above steps and demonstrates the entire process of achieving the main goal W_0 (Figure 3). So, in Figure 3 shows the main stages of achieving the goals and the intermediate results of their implementation. It should be noted that their relationship is especially important, since the content and result of each of them affects the next stage.

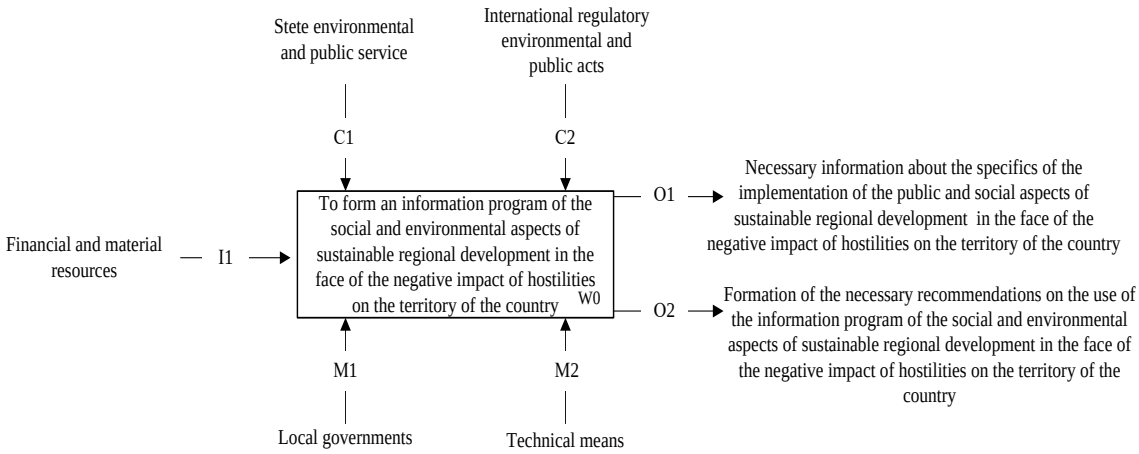

Figure 2. Demonstration diagram of the process of achieving the final goal W_0

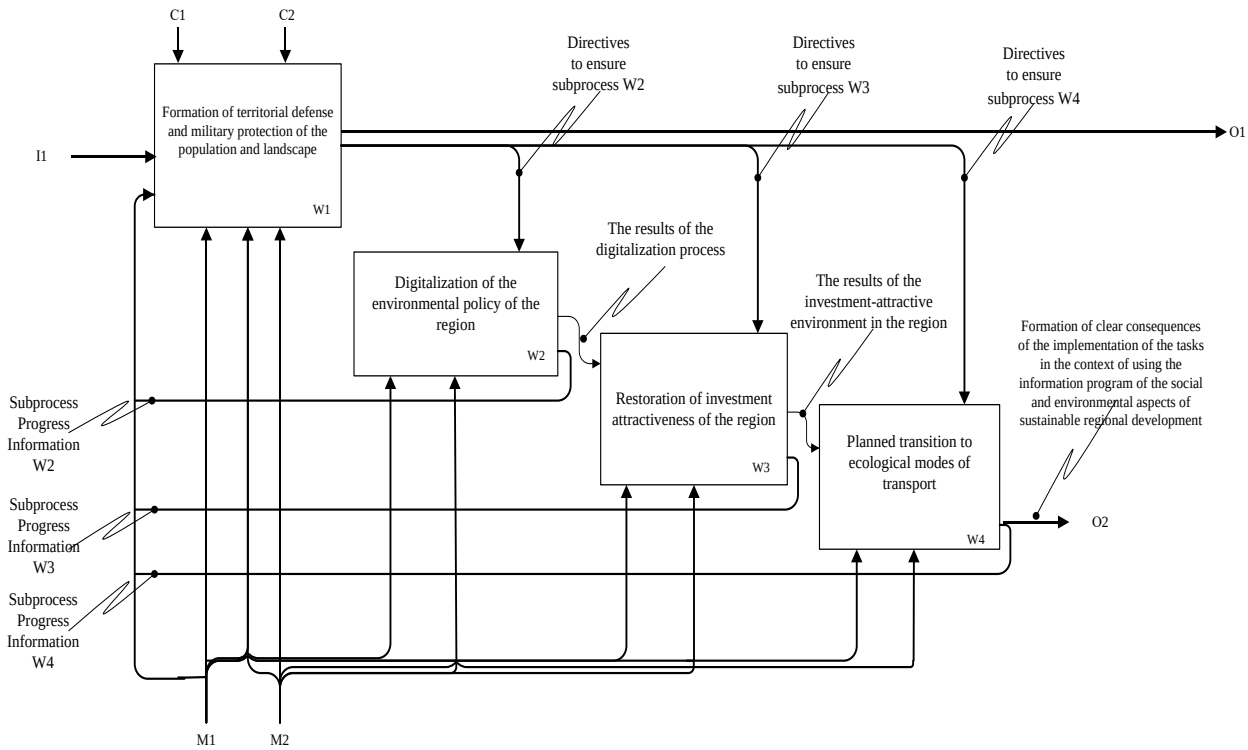

Figure 3. The main demonstration model of the formation process of information program of the social and environmental aspects of sustainable regional development in the face of the negative impact of military actions

For a better understanding of the presented demonstration model, it will be important to consider each of the stages W_1-W_4.

W_1 - Formation of territorial defense and military protection of the population and landscape. This element includes ensuring public safety and maintaining and restoring the ecological balance of the region. Public security is one of the key categories of modern science and practice of ensuring national security and acts as a defining quality (attribute) of society in terms of its integrity, relative stability and civil harmony. Public security, along with other components of national security, characterizes the reliability of existence and the sustainability of the development of the socio-political system of the state. At the same time, public security also implies a special type of activity to ensure it, which covers a system of measures aimed at preventing dangers and threats of a different nature to a person and society, including the negative impact of the consequences of military actions.

If we talk about ecological balance, then it should be noted that the negative consequences of military operations are complex and multi-vector. Shelling of industrial facilities and infrastructure leads to fires, which lead to additional air, soil and water pollution. Combustion products released into the air consist of toxic gases and particulate matter. There will also be significant soil and water pollution at these facilities. Where firefighting activities have been carried out, contamination may include remnants of firefighting foam. The risks associated with damage to communications, enterprises and other objects that pose an increased environmental hazard are of particular importance, because in the absence of control and opportunities to eliminate negative consequences, these phenomena potentially increase the scale of negative impact.

W_2 - Digitalization of the environmental policy of the region. Sustainable regional development involves ensuring economic growth, quality of life and the environment, taking into account the interests of future generations. Achieving these goals is impossible without taking into account institutional and environmental factors specific to a given geographical and historical context. The fourth industrial revolution, based on the digital revolution, significantly changes the nature of the interaction between man, the enterprises he creates and the environment. The large-scale use of explosive digital and production technologies associated with the spread of smart industry (Industry 4.0) causes fundamental transformations of this interaction. The digitalization of the region's environmental policy provides a powerful incentive for the further development of the "green" economy by increasing production efficiency, reducing the demand for natural resources due to the complete or partial replacement of physical products and services with their virtual equivalents, and the dematerialization of human activities. This creates the potential to reduce CO_2 emissions.

W_3 - Restoration of investment attractiveness of the region. Socio-economic instability in the country, caused by negative impact of military actions on the territory of the country, has become a determining factor in reducing the competitiveness of the national economy and reducing the overall investment attractiveness, causing an increase in negative changes in key macroeconomic indicators, such as GDP, inflation, budget deficit, gold and foreign exchange reserves, and strategic reserves of certain types of resources. However, these factors most tangibly affect the level of investment attractiveness. This is fraught with the formation of a sustainable process of economic stagnation, because the suspension of investment projects due to a decrease in investor confidence and fears about further conditions for investment activity slows down the pace of its development. Realization of the set goal involves the implementation of a whole range of measures aimed at overcoming the negative factors of investment activity (socio-economic instability, inconsistent legislation, corruption, excessive bureaucratization, pressure on business, ill-considered tax burden and weak insurance support) and ensuring positive changes in the national economy (creation of economic, political, social stability, ensuring transparency of state regulation and openness in the economy).

W_4 - Planned transition to ecological modes of transport. In recent decades, the pace of global industrial integration has become much faster due to sustainable economic growth and innovative development in areas such as technology, science, industry, energy, transport and communications. A modern infrastructure is being created, new complex economic and technical systems are emerging. Under these conditions, the transport component is a backbone vector of sustainable regional development and structural and functional integration into the international transport infrastructure, the operation and expansion of which is accompanied by a negative impact on the environment. The negative impact of the consequences of military actions only actualized these processes, given that as a result of constant military actions, the ecological state of the region is in extremely poor condition, and fuel materials are constantly in short supply. Considering that the important steps in this stage are the following: the need to move the transport industry to a sustainable development model; development of a concept for integrating the environmental component into transport policy; stimulating the development of public transport, including electric transport; introduction of an environmental assessment of transport development programs in cities in accordance with the principles of sustainable development; development of incentives to encourage the renewal of the car fleet, preferring cars that meet environmental standards; implementation of measures to limit and reduce greenhouse gas emissions; development of state building standards for the arrangement of bio-transitions on roads and railways based on the migration routes of animals; introduction of a reporting mechanism on transport and environmental issues; ensuring the training and advanced training of personnel on the greening of the transport industry.

It should be noted that this demonstration model aims to show, detail and systematize the general view of the process of forming an information program for sustainable regional development. If there is a need for a more detailed consideration and algorithmization of each of the steps, this model allows the formation of subcontracting models of the second, third levels. There can be the number of such levels that is necessary for a specific regional development authority or even a separate authorized person. The advantage of such a model and the reason for choosing it is the fact that it has a relatively high level of stability in the context of introducing local or systemic changes to its structure, which is especially important in the context of a significant level of instability of external and internal conditions of functioning under the influence of the negative consequences of military actions.

This model was formed in accordance with the current state of sustainable development in the study area. In the next, with the transition to a post-war state, this model will be adjusted in accordance with the new realities.

5. DISCUSSIONS

Discussing the results of the study, it should be noted that today the issues of ensuring sustainable regional development in the context of public and environmental aspects in the context of the consequences of military operations have not been sufficiently studied.

Almost all studies of well-known scientists and economists [15-18], who study sustainable regional development, namely the public and environmental components, initially put into their models the most favorable conditions for the development of the region, when there is practically no exogenous and endogenous influence, all types of security are provided and balanced in state.

So, for example, scientists Kryshtanovych et al. [16] and Asadi and Jafari Samimi [17] in their work have formed a clear and extensive system for ensuring sustainable regional development, taking into account the peculiarities of ensuring environmental protection, solving public problems, digitalization of a particular region, but these steps concern only peacetime. Our study takes into account the conditions for ensuring sustainable regional development in the face of military consequences, which is very relevant today, when the entire civilized world has realized the fact that some countries still choose the military path to solve their own geopolitical problems.

At the same time, the study of Semenenko et al. [18] contains data on the features of ensuring sustainable regional development in the face of complex and crisis situations that negatively affect sustainable regional development. But the results of this work can be presented to a greater extent as a theoretical statement of the significant complexity of developing environmental and social elements of sustainable regional development in these conditions, while there are practically no real steps that could slightly improve the situation.

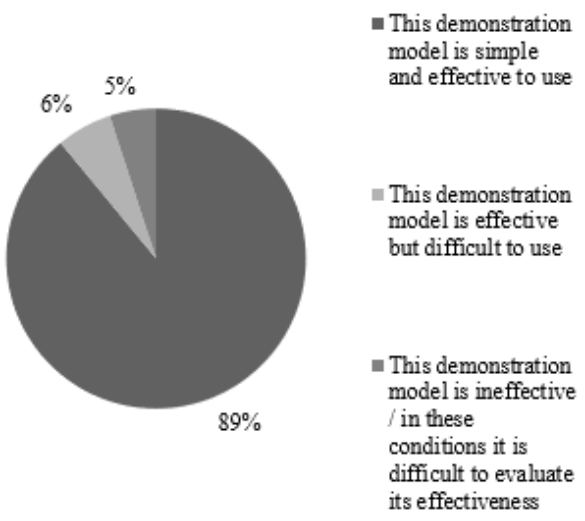

Figure 4. The results of the survey on the effectiveness of the use of the demonstration model in the regional development department of local governments of Ukraine (Lviv region)

At the same time, it should be noted that, given that in the conditions of active military actions, which at the time of writing the article are taking place throughout Ukraine, there are great difficulties with the process of a full assessment of the effectiveness of the presented model. But for the primary subjective assessment of our demonstration model, we conducted a survey of representatives of the regional local administration regarding the effectiveness of this model in the context of stimulating sustainable regional development in the face of the negative consequences of military actions. The survey was conducted in the online communication mode, during which twenty respondents were asked the question of the effectiveness and ease of use of this model. The survey results are shown in Figure 4. The entire survey process was carried out in accordance with the ethical standards of a statistical survey, participation in the survey was voluntary, all personal data of the respondents remained anonymous at their request.

As can be seen from the data presented in Figure 4, the majority of respondents noted the effectiveness and ease of use of our demo model. At the same time, it should be noted that this survey is intermediate and cannot be a full-fledged evidence of the effectiveness of this model, but the answers received from respondents indicate that at the initial stages this demonstration model has proved its effectiveness and expediency of existence and has the right to exist.

Thus, our study differs from others in that it offers real steps to ensure sustainable regional development in the context of social and environmental aspects in the face of the negative impact of military actions, and given that such studies are currently practically absent, our work is especially relevant. In addition, the model we have chosen is distinguished by its multi-level and flexibility, which allows local or system changes to be made to it at any time.

6. CONCLUSIONS

The sustainable development of a region is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The concept of sustainable development can be interpreted in many ways, but at its core, it is an approach to regional development that functions to balance the various competitive needs - environmental and public - faced by society. It should be noted that the problems of sustainable development are of particular importance in modern economic conditions, which is due to the lack of resource support, which is due, first of all, to the negative impact of military operations on the territory of the country. This problem is emphasized by the governments of many states, public organizations, scientists, and ordinary citizens. It is necessary to form a new paradigm of regional development that takes into account past experience and meets modern realities. However, in the context of the negative impact of military actions on the territory of the country, a generally accepted formulation of the essence of sustainable development has not been formed, and difficulties arise with the practical application of the concept of sustainable development at the regional level.

Strategic planning for the sustainable development of territories is one of the most promising and optimized mechanisms for the formation of long-term policy at the regional level in the context of the need for a balanced economic, social and environmental development of territories. The sustainable development of the regions is the basis for the progressive development of the country, and the implementation of its principles is a prerequisite for the integration of the country into the world community.

As a result of the study, we created an information program for the social and environmental aspects of sustainable regional development under the negative impact of the consequences of military operations. It should be noted that this program is for informational purposes only. Its assessment was carried out at the primary subjective level, with the help of a survey of persons used in the performance of their own professional duties in in the regional development department of local governments of Ukraine (Lviv region).

The conducted research has limitations. Ukraine was chosen for the study, in which, at the time of writing, the aggressive military expansion by the Russian Federation continued. In this regard, all the steps presented in the demonstration model of ways to ensure sustainable regional development in the face of the negative impact of military actions in the context of the public and environmental component take into account the peculiarities of regional development in Eastern Europe.

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