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SOCIO-ECOLOGICAL EFFECT OF PUBLIC MANAGEMENT OF GREEN DEVELOPMENT IN THE CONTEXT OF THE PHILOSOPHY OF MODERN ECOLOGY

Abstract

In recent years, the idea of Green economy has been widely discussed by experts in environmental economics and in various political forums. Many countries use various tools and principles of Green economy in their national policies and growth strategies. However, some countries fear that the transition to a Green economy model may hamper their development in the context of the philosophy of modern ecology. That is why the formation of a clear methodology for the Green economy is essential today. The article discusses the prerequisites for implementation, the basic principles of Green economy into the public administration system, and provides a system for modelling ways to implement the principles of Green economy using the IDEF0 methodology in the context of the philosophy of modern modern philosophy ecology. This methodology allows seeing clearly the ways and means of achieving this goal.

Keywords: philosophy, socio-ecological effect, ecology public administration, environmental protection.

Introduction

At the turn of the century, at the beginning of the new millennium, humankind is trying to sum up its achievements, to determine the names of “people of the century” and “millennium”. If we were to offer research on the most commonly used words and terms of the 20th century, undoubtedly, the term “ecology” would also be among them. In recent years, this term has been used very often both by representatives of natural and social sciences. And, finally, politicians, representatives of social groups, writers, publicists. There is a contradictory impression: on the one hand, attention to ecology is growing, and, on the other hand, it seems that the subject of “ecological conversations” has already been exhausted since it is known that the current ecological state

is in crisis, humanity is striving to get out of the crisis and such a way out is problematic.

Since about the 60s, humankind began to actively move towards realizing the essential connection between the possibility of its future and the state of the natural environment. Over several decades, significant changes have occurred at the level of mass consciousness from an understanding of the threat of an ecological catastrophe by a limited circle of the Western scientific-theoretical, business and political elite to the “general” awareness of the population about the planetary ecological crisis - today, so to speak, a child knows about it. Furthermore, what, perhaps most importantly, the ecological problem is recognized not only at the level of scientific knowledge but also at the state-political level as “problem No. 1” of the survival of humankind.

The evidence of the connection between the global ecological crisis and the growing man-made pressure on nature has illuminated the problem of man's place in the natural world in a new way. The question what the principles of human activity should be in order not to influence the environment in a destructive way, did not exist before natural science, which was classical ecology, but before philosophy. The ideas of expanding the sphere of human morality to comprise nature and the need to form a new environmentally-oriented worldview are now evaluated by researchers as conditions for humanity's movement towards a new civilizational paradigm.

So, in resolving the spectrum of issues related to the current ecological crisis, a circle of samples has been outlined, the understanding of which has gone beyond the boundaries of ecology as a specific natural science and can be defined as the philosophy of ecology. Without trying to exhaust all aspects of this industry, I would like to draw your attention to 3 fundamentally essential and, in my opinion, interrelated and interdependent angles of the philosophy of ecology.

The first perspective is due to the need to assess the features of modern ecology as a natural science in the way of its movement from classical to post-non-classical science. They are associated both with the understanding of man's place in the ecosystem of the biosphere and the peculiarities of human influence on the course of cognition.

The inclusion of the axiological component in scientific and ecological knowledge at the level of post-non-classical science determines the second integral perspective of the philosophy of modern ecology - the definition of the ecological ethos, that is, the orientations of the moral attitude towards nature, living things and how this affects the development of a green economy.

Sustainable development and Green economy require new ideas for its implementation. Today it is obvious that for the survival and develop-

ment of humankind, a transition to a new economic model of development is needed. Such a model is recognized as a model of the economy of "Green economy". Sustainable development remains the most important long-term goal. However, in order to achieve it, the economy needs to be made green. The sustainable development model provides a comprehensive relationship between the three components of development: economic, social and environmental. The concept of environmental, economic growth is designed to provide a more harmonization of these three components, which would be acceptable to all countries of the world, regardless of the level of development in the context of the philosophy of modern ecology.

Without introducing fundamentally new approaches to the formation of social development strategies, it is impossible to offer a way out of the current situation of a complex crisis at the global level of a dangerous combination of fuel and food, financial and climate crises. Collectively, global crises deepen pressing socio-economic problems related to job cuts, social insecurity and poverty. Preserving the "polluting" economy with its traditional dependence on non-renewable energy sources, wasteful use of material resources, high climate risks and investing in unstable sectors of the economy will reproduce the same imbalances. It will make permanent those global crises that humanity is facing today. The transition to the principles of "Green economy" and a reduction in investment in fossil fuels and other "polluting" sectors while increasing investments in renewable energy, energy conservation, public transport, sustainable agriculture, the protection and rational use of land and water resources will allow providing a solution to these problems.

The concept of Green economy is based on the assumption that economic and environmental policies can stimulate Green economy and increase carbon and energy, and material efficiency while preserving natural assets and improving people's quality of life (Deschenes, 2010).

Green economy means stimulating economic growth and development while ensuring the preservation of natural assets and the uninterrupted supply of resources and ecosystem services on which our well-being depends. Doing this must catalyse investment and innovation, which will form the basis of sustainable growth and lead to new economic opportunities.

Responding to the challenge of time, a number of countries have embarked on greening the economy, which requires improving production processes and creating new, more efficient products, stimulating innovation and structural changes in the economy, creating conditions for financial consolidation by reviewing the composition and effectiveness of public spending and increasing revenue for by increasing pollution charges, strengthening investor confidence through greater predictability and stability, creating more balanced macroeconomic conditions and stable prices for natural resources. Developing effective policies to support Green economy requires reliable information that reflects the relationship between the economy and the environment. Monitoring processes and assessing progress concerning the Green economy contribute to a better understanding of the factors that determine it and point to the possibility of synergies concerning interrelated economic and environmental goals. A correct idea of the country's natural assets and existing economic opportunities, monitoring environmental aspects of the quality of life contribute to the identification of state policy priorities. Reliable data is also needed to inform the public about progress in Green economy.

The concept of environmental growth is gaining increasing public resonance. It is actively discussed by scientists, experts, politicians, non-governmental organizations. The term "Green economy" was first used by a group of scientists from the London Center for Environmental Economics (LEEC) D. Pierce, A. Markandyan, E. Barbier in the report of the British government "Project Green Economy". Although it should be

recognized that various aspects of the environmental problem and the possibilities of its solution were raised by scientists much earlier (Arrow, Dasgupta, Goulder, Mumford, & Oleson, 2012).

In 1992, the United Nations Conference on Environment and Development, known as the Earth Summit, was held in Rio de Janeiro to mark the new vector of human movement. The Earth Summit highlighted the principles of sustainable development to improve social security and the economic systems that they support and environmental development issues at the international level. Its main results were the adoption of the following documents: Agenda 21, the Declaration on Environment and Development, the Principles of Forestry and two conventions: the UN Framework Convention on Climate Change and the Convention on Biological Diversity. For two decades, these documents have shaped and guided sustainable development strategies and programs at the international, regional, national, and local levels. The program plan aimed to achieve two goals – a high-quality environment and healthy environmental growth for all peoples of the world in the context of the philosophy of modern ecology.

A Green economy theory does not favour any one political theory. It is possible in any economy, state or market is not an alternative to sustainable development. Instead, it is a way of pursuing a course towards such development at the national, regional and world levels and in ways in the context of the philosophy of modern ecology.

Theoretical Framework

Issues of the development of Green economy principles in the context of public administration have begun to be studied relatively recently. The initial impetus to these studies was the global awareness of the importance of implementing the principles of greening at all levels of the state administration apparatus in the context of the

philosophy of modern ecology.

According to Khutorova (2019), the highest goal of global civilisation is today the creation of an extra-national citizen of a single world state, which will be characterized by special mobility to harsh changes in living conditions, professions, and cultural environment. To this, in light of the existing environmental contradictions, it is justifiable to add a responsible attitude to the environment as a key attribute of the modern citizen of the world against the backdrop of the crisis in the environmental component of economic development.

Substantiation of the expediency of building a “Green economy” was offered more than a quarter of a century ago. However, the need to switch to “green rails” has become especially relevant today (Pichert & Katsikopoulos, 2008).

The historical aspects of the implementation of the Green economy and the staged implementation of the principles of the green economy in their study were submitted by such authors as Volkery and Rouabhi (2015).

Lutsko (2019), systematizing the main aspects of the concept of “green” growth, concluded that it:

- Increases the welfare of the nation.
- Allows efficient and rational use of energy resources.
- Reduces harmful emissions, protecting the environment.
- Reduces ecosystem costs and biodiversity.

After more than one scientist formed the basic principles and characteristics of Green economy and greening the economy, the next step was to find ways of its development and relationalization in practice. One of these scientists was Low (2011), who in his work presented the principles of the practical development of Green economy. In subsequent years, Satbyul, Ho, and Yeora (2014) worked in this scientific field, who explored new principles for determining the level of Green economy using the example of South Korea.

In recent years, these studies were continued

by Pidlisnyuk, Zagirnyak, and Irkova (2020), who in their work developed strategic principles for Green economy in the context of modern climate change

In particular, Zervas (2012), Ahlert and Meyer (2013) in their works investigated the influence of the latest developments in the field of Green economy, in particular in the field of energy, environmental protection, in the context of landscape objects. In his work, the principles of greening the economic development of states, both at the level of an individual enterprise and at the level of the whole state, were developed.

Another scientist who studied the concept of Green economy can be considered Berezhnaya (2019), who in her work systematized the international aspects of Green economy, studying the experience of leading countries of the world. This work covered both types of research at the industry level and the level of government.

While Vanieva (2020) explored the financial and economic instruments of Green economy, which are recognized as another way to create an environmentally friendly system of government and production that offers less polluting products and services, as well as changing consumer behavior.

Bowen (2012) investigated issues of optimizing the labour market and methods for finding new jobs in the context of implementing Green economy principles.

Chmyr & Zakharkovich (2020), in their work, presented the foundations of Green economy in public administration. The basis of his work was the efficient use of natural resources, as well as the optimization and preservation of landscape objects.

Considering the studies presented above, we can conclude that to date, a large number of principles and measures have been developed to improve the processes of the Green economy both in general economic and in relations between the state and public administration. Furthermore, to a greater extent, all these principles are not systematized and look like a set of optional rules

and norms. Given this, an important element of our research will be forming a clear model that will allow us to understand the sequence of actions in achieving our goals.

The success of the implementation of government initiatives aimed at sustainable economic growth, to a large extent, depends on a stable understanding in the minds of people of the norm of attitude to the natural environment and social responsibility. However, even the position of “environmental indifference” has been formed over decades, can be transformed in response to transparent and effective steps by authorities in the direction of implementing the concept of sustainable development and Green economy at the national level, which are accompanied by a comprehensive popularization of environmentally friendly behaviour and the idea that environmental degradation is part of economic development – the problem of every citizen since its consequences will harm the welfare of all excluding the inhabitants of the Earth (Kuhnhenh, 2018).

In the context of intensive globalization, integration and transnationalization of the economy, a number of problems, among which an important place belongs to the formation of an “environmentally oriented” mentality, are gaining global scale, are being updated internationally and are losing nationality. Accordingly, the goals of human development are also being transformed.

The concept of Green economy includes the ideas of many areas of economic science and philosophy, and ecology, such as environmental economics, feminist economics, postmodernism, resource-oriented economics, environmental economics, anti-consumerism, antiglobalism, green anarchism, green politics, the theory of international relations, etc. related to sustainable development and Green economy problems.

The Green economy and Sustainable Development Strategy identifies several key trends requiring action, as well as a number of long-term goals and specific measures at the EU level to achieve them (Breitschopf, Nathani, & Resch, 2012):

- limiting climate change. The first long-term specific objective of the strategy is to limit climate change and its consequences by fulfilling the obligations of the Kyoto Protocol and the European Strategy for Climate Change. The subject of special labour is energy efficiency, renewable energy and transport;
- limiting the negative effects of transport and reducing regional differences is another long-term goal. It has been determined that it is necessary to make transport environmentally friendly and healthy. The strategy includes, inter alia, charging for infrastructure, promoting alternatives to road transport and vehicles that produce less pollution and consume less energy;
- the promotion of more sustainable modes of production and consumption. It is recognized that it is necessary to break the link between economic growth and environmental degradation and pay attention to what kind of load ecosystems can withstand. To this end, the EU should, among other things, promote green public procurement, set environmental and social performance targets for products in collaboration with stakeholders, disseminate environmental innovations and environmental technologies, and provide information and appropriate labelling of products and services;
- sustainable management of natural resources. The strategy envisages avoiding over-exploitation of natural resources, increasing the efficiency of their use through recycling, and recognizing the value of ecosystem services. In particular, the EU must make efforts in the field of agriculture, fisheries and forest management so that the Natura-2000 network is completed, identify and implement priority actions for the protection of biodiversity and ensure that due consideration is given to aspects related to the seas and oceans.
The theory of Green economy is based on three axioms (O’Neill, 2018):
- it is impossible to expand the sphere of influence in a limited space infinitely;

- it is impossible to demand the satisfaction of infinitely growing needs in conditions of limited resources;
- everything on the surface of the earth is interconnected.

Green sectors of the economy provide for a change in the structure of the economy in which (Grubler, 2018):

- more attention is paid to the social aspect of sustainable development (social cohesion, ensuring access to a variety of resources, combating poverty and unemployment, etc.),
- the economy is based not only on the extractive sector but more and more on the processing sector and the service sector;
- dominated by investments in environmentally friendly production, consumption, as well as improving the quality of goods and services from an environmental point of view;
- natural resources are used on an ongoing basis, not dependent on fossil fuels;
- forms new economic opportunities, expanding the scope of economic development and reducing poverty;
- an “ecological working system” is taking shape in agriculture, industry, research and development, administrative activities and service sectors.

Now the Green economy strategy is considered a new type of strategy that operates on environmentally friendly and resource-saving, landscape-optimizing technologies and applies modern methods and techniques for implementing green development, adapting the existing production process and the way of life of society to them. In its simple interpretation, the concept of Green economy should be understood as a low-carbon, resource-saving, landscape-optimizing and socially inclusive model of the economy and state structure, which is developed as a more practice-oriented version of the concept of sustainable development (Prakash & Potoski, 2006).

Since 1992, great efforts have been made by the world community to achieve sustainable development of Green economy at the local, state

and international levels. At the UN Millennium Forum (2000), countries agreed on a number of the Millennium Development Goals (MDGs).

Methodology

For the specification and visual modelling of ways to improve Green economy in the context of government in the field of ensuring Green economy and environmental safety, we have chosen a functional modelling methodology and a graphical description of the processes (IDEF0). The reason for choosing this model among others was that during its construction, the emphasis is on the phasing and characteristics of subcontracting elements of the model. In our opinion, this type of modelling itself will allow us to fully depict the sequence and conceptualism of ways to improve Green economy in the context of government in the context of the philosophy of modern ecology.

In its general theoretical form, the IDEF0 functional model is intended to describe existing processes that use both natural and graphic languages. To transmit information about a particular system, the source of the graphic language is the IDEF0 methodology itself.

The IDEF0 methodology prescribes the construction of a hierarchical system of diagrams – single descriptions of fragments of the system. First, a description is made of the system as a whole and its interaction with the outside world (functional diagram). Functional decomposition is performed - the system is divided into subsystems, and each subsystem is described separately (decomposition diagrams). Then each subsystem is divided into smaller ones and so on until the necessary degree of detail is achieved.

Blocks in IDEF0 are placed in order of importance, as the chart author understands it. This relative order is called dominance. Domination is understood as the influence that one block has on other blocks of the diagram. For example, the most dominant block of a diagram can be either the first of the required sequence of functions or

a planning or controlling function that affects all others.

To begin with, for the basic formation of the goal of our research, we need to create a functional diagram of the highest level A-0, which will be the main in the process of constructing a

functional model IDEF0. Given this, in *Figure 1*, we systematized the most significant elements of modelling ways to improve the process of Green economy and environmental safety in the country.

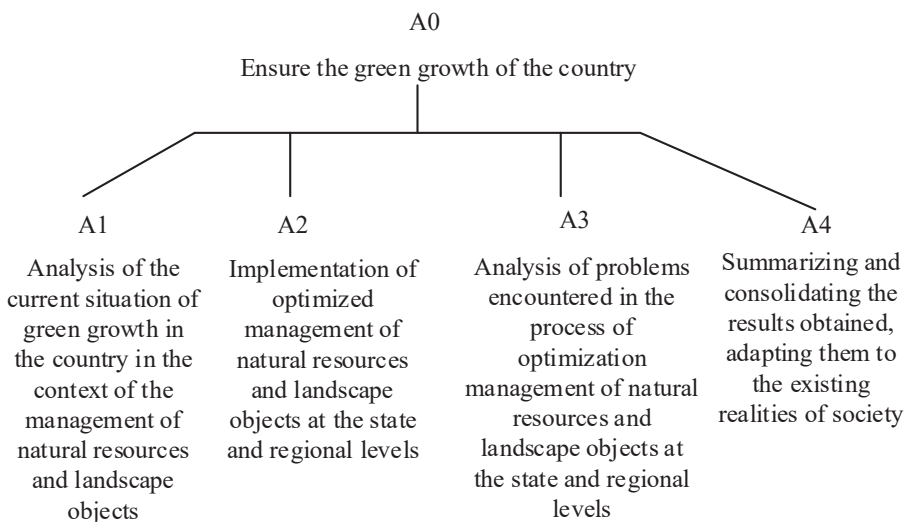


Figure 1. Hierarchical structure of functional model IDEF0 of the main ways to improve the principles of Green economy in the context of the philosophy of modern ecology (developed by authors) (*development by authors*)

The scheme developed by us allows us to see a list of the main ways to improve the principles of Green economy in the country. This hierarchical structure is a simplified model. The next step will be the use of functional mechanisms IDEF0, which will allow to expand and detail the paths to fully understand the whole algorithm of improving the Green economy in the country.

Results and Discussions

In order to fully realize the functional properties of the IDEF0 model, at this stage, it is necessary to use its main feature, namely, that in this model, each block implements the process of

transforming inputs into outputs while attracting certain volumes and types of resources. Given this, having formed and depicted the main goal in the form of A0, the next step in our modelling should be the formation and schematization of the initial elements necessary to achieve the goal in the form of a context diagram (*Figure 2*). The context diagram is one block with arrows that reflect the relationship of the described process with the external environment. Thus, we can say that the context diagram shows the modelling region and its boundaries. The name of the block corresponds to the name of the described function (process).

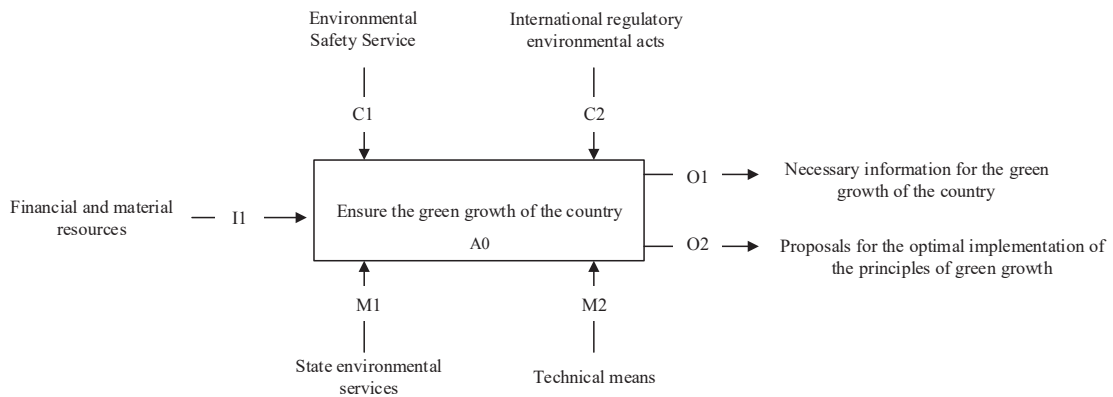


Figure 2. Context diagram of elements of model IDEF0 of the main ways to improve the principles of Green economy in the context of the philosophy of modern ecology (*development by authors*)

For a better understanding of the functional and systematic features of the model we constructed, it would be advisable to explain its basic elements.

The input element, which is indicated by the symbol “I”, in our case, means the financial and material resources necessary to achieve the goal. This group includes those resources that are already available for use, as well as those that need to be obtained in the future.

Control objects were marked as the symbol “C”:

- C1 - environmental safety service. This control element forms a set of internal regulatory information that is necessary for the realization of the goal.
- C2 - international regulations, this subsection applies to the regulatory information that comes to the state from outside and forms an innovative and corrective basis for achieving the goal.

We designated the objects of the mechanism with the symbol “M”:

- M1 - state environmental services. These objects take a more prominent place in the process of implementing the principles of Green economy in the country. They determine the order, as well as the features of this process.

- M2 - technical means. Specific technical tools formed to implement the principles of Green economy in the state are the basic mechanisms for achieving the goal, given that they reflect its practical implementation.

The final elements in this process are the outputs, which reflect the result that we can get on the outputs of the practical implementation of the IDEF0 functional model. These elements are indicated by the symbol “O”:

- O1 - This information is generated after all the elements of the model are completed, and it becomes possible to form an assessment of the results.
- O2 - Proposals for the optimal implementation of the principles of Green economy. These proposals can be formed only after a full passage of all stages and after a secondary analysis and adjustment of their shortcomings and features.

After we have presented and described all the functional elements of the IDEF0 model, the next step will be the reflection of their functional interactions and interconversions. To do this, we built decompositions of the first level of the process of improving Green economy processes in the state (*Figure 3*).

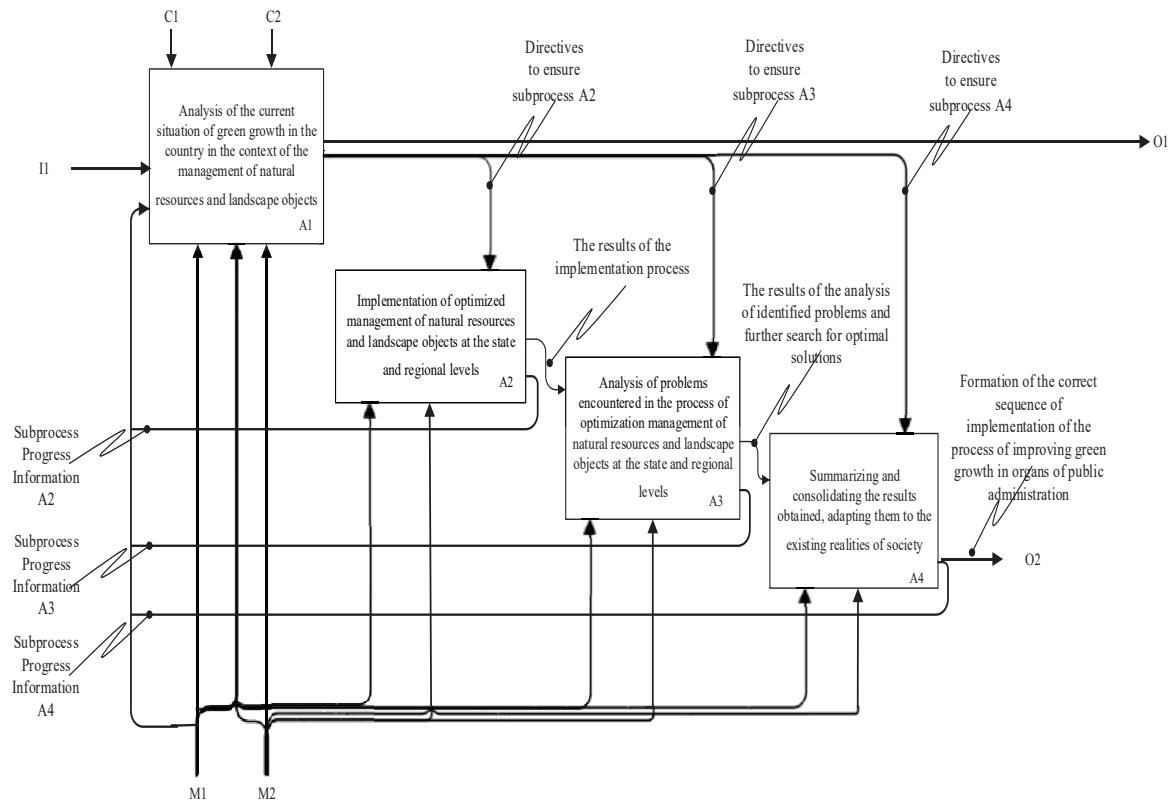


Figure 3. Decompositions of the first level of functional model IDEF0 of the main ways to improve the principles of Green economy in the context of the philosophy of modern ecology (*development by authors*)

It is worth noting that this decomposition of the first level can be considered the initial stage. This is due to the fact that if for a better understanding of the technology and mechanisms, as well as to explain the practical implementation of this goal, it is necessary to detail the above steps; this model will allow us to build decompositions of the second, third and further levels.

Given the above decomposition, it will be useful to explain the content of each stage of the process of improving Green economy in the state, in particular in public administration.

Given the decomposition presented, it would be advisable to explain the content of each of the stages of the process of improving Green economy in the country, in particular in government:

➤ A1 – analysis of the current situation of the Green economy in the country in the context of managing natural resources and landscape

objects. This stage provides for the implementation of a thorough analysis of the existing situation with the subsequent identification of the most problematic areas and the main prospects for the processes and mechanisms of managing natural resources and landscape objects.

- A2 – the introduction of optimized management of natural resources and landscape objects at the state and regional levels. At this stage, an attempt is made to reconcile primary measures to improve the process of the Green economy in the context of optimizing the public administration process. It is worth noting that this stage cannot be considered final, since after it, a full assessment of the effectiveness of the measures taken should take place.
- A3 – analysis of problems arising in the pro-

cess of optimizing the management of natural resources and landscape objects at the state and regional levels. During this stage, the analysis and assessment of those problems or difficulties that arose in the second stage in the process of optimizing the management of natural resources and landscape objects at the state and regional levels. In the following, based on the analysis of these problems, it will be possible to formulate and implement the necessary adjustments.

- A4 – generalization and consolidation of the results obtained, their adaptation to the existing realities of society. During this stage, the results are systematized, and a holistic paradigm improving the Green economy in the country is formed in the context of optimizing the resource base and landscape objects. This paradigm should be characterized by flexibility and adaptability, as it should be simply implemented for different countries.

Each of these stages is a generalization of branched and complex processes. In the decomposition of the following levels, this model makes it possible to specify them under existing realities fully.

The last elements that we do not describe are intermediate inputs, outputs, control mechanisms, which are depicted in the form of arrows on the constructed functional model IDEF0.

These elements consist of the following parts:

- subprocess management directives A2, A3, A4 - represent the results of the praise of the entities that control the process of monitoring the implementation of these steps;
- the output “Information on the progress of the subprocess A2, A3, A4” - represents the information that the entities responsible for the process of monitoring the implementation of these stages receive from each subprocess. Based on this information, decisions are made on the completion of subprocesses and the transition to the following;

The next steps of our study became the practical implementation of this model. It was applied in separate structural government units in Eastern Europe, particularly in Poland and Ukraine. After applying this model, we carried out an analysis that showed the dynamics of the effectiveness of managerial decision-making in the field of improving Green economy processes. As a result, after conducting this analysis, we can say that the efficiency of the activities of these structural units has objectively improved since the number of successfully implemented management decisions in the field of improving Green economy has increased. These indicators are shown in Figure 4, which clearly demonstrate the effectiveness of our model.

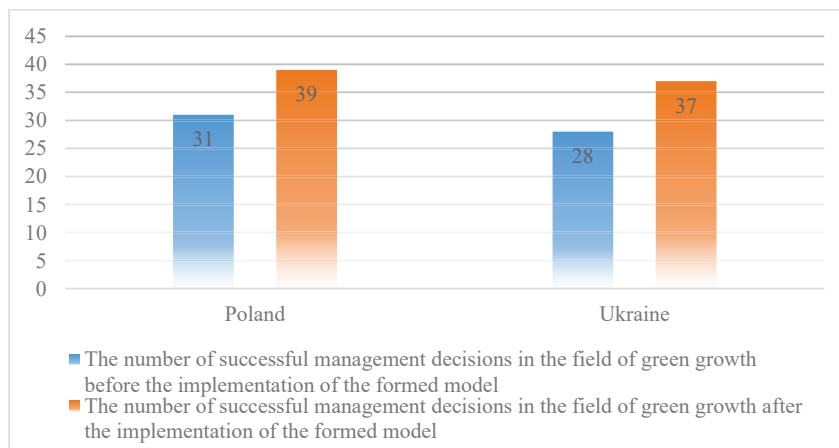


Figure 4. Dynamics of successfully implemented management decisions in the field of Green economy after the implementation of our model in Poland and Ukraine in the context of the philosophy of modern ecology (development by authors).

Given the above indicators, we can conclude that the model we have formed is effective. In the future, this model can be transformed and specified for the existing realities and features of the functioning of public administration in each country.

Conclusion

Green economy means fostering economic growth and development in which natural assets continue to provide resources and environmental services. Green economy provides a practical and flexible approach to achieve concrete, measurable progress on all its economic and environmental principles while at the same time fully taking into account the social consequences of greening the dynamics of economic growth. The focus of Green economy strategies is to ensure that natural assets can fully sustainably realize their economic potential. This potential includes the provision of critical life support services - clean air and water and sustainable biodiversity, necessary to maintain food production and human health. Natural assets are not infinitely replaceable, so Green economy policies take this into account in the context of the philosophy of modern ecology.

For our research, we applied the methodology of functional modelling and a graphical description of the processes (IDEF0). This model allowed us to graphically display the process of improving Green economy within the country, in particular at the level of government. After forming all stages of this model, it was put into practice in structural units of government in Eastern Europe (Ukraine and Poland). After its implementation and analysis, it can be concluded that this model is successful and can be used in the context of improving Green economy indicators in government in the context of the philosophy of modern ecology.

Implementing this methodology will help preserve ecosystems, biodiversity, reduce the consumption of energy, resources, and water thanks

to highly efficient technologies; carbon emissions reduction; minimizing or generally preventing the formation of all forms of waste and pollution. The scheme developed by us allows us to see a list of the main ways to improve the principles of the Green economy in the country. This hierarchical structure is a simplified model. The next step will be the use of functional mechanisms IDEF0, which will allow to expand and detail the paths to fully understand the whole algorithm of the process of improving the Green economy in the country.

As a result, it should be noted that the philosophy of ecology remains an "open system", the elements of which need definition and comprehension. The modern integration of Ukraine into the system of European states requires economic stability and the provision of environmental safety, the issues of which constitute an essential layer of the philosophy of ecology. Outside of the above, there are such important issues for the existence of nature and man as the possibility of the evolution of an artificial biological world, as the need for a new understanding of the development of genetic engineering, particularly gene therapy many others. Their research will clarify the attitude of modern humans to their future - either as to reality or utopia.

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