Transformation and Post-War Economic Recovery of Ukraine

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Edited by

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Even now, before achieving complete victory in the war against the Russian aggressor, the process of economic recovery has begun in Ukraine.

Whenever significant reconstruction is required from devastating economic consequences (immediately after war, technological or natural disasters), world leaders often declare the need for a new "Marshall Plan". And now, more than 70 years after its implementation, the conditions for using its principles and approaches to restore the economy of Ukraine have developed again. Currently, in Ukraine there are more than enough analogues with the economic and other consequences of the World War II, only it is necessary to restore not sixteen, but one country, and the donor will not be the United States alone, but, we hope, dozens of countries, international organizations, many individual communities, cities, enterprises and wealthy individuals.

Thus, the purpose of this monograph is to explore the possibilities of the post-war revival of the main sectors of the Ukrainian economy based on positive world experience and advanced technologies. To obtain practically applicable results, highly qualified researchers from various universities and research centres of Ukraine were involved.

Until now, neither in Ukraine nor in other countries there has been a comprehensive study of a similar problem, where the possibilities of restoration and competitive development of the main sectors of the economy were analysed. Sections of the monograph contain conclusions, which will be summarized by scientific editors, discussed at special seminars and presented to the government and to the office of the President of Ukraine for decision-making and practical implementation.

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PREFACE

Russian aggression against Ukraine has been ongoing for 10 years. Thousands of Ukrainians have fallen victim to it, Ukrainian cities and villages have been destroyed, civilian infrastructure, plants and factories, and a significant portion of the country's energy infrastructure have been ruined. The colossal losses and destruction have led to a substantial reduction in the country's economic potential. However, even under these circumstances, Ukrainian society demonstrates a sufficiently high level of resilience in all spheres, which is based on various forms and mechanisms of adaptation to the consequences of military and terrorist actions. The process of economic recovery is already underway to some extent in Ukraine, but it can only be fully realized after the end of the war. From this perspective, Ukraine and its allies should already be developing conceptual foundations for the country's economic recovery in the post-war period.

The fundamental significance of the process of economic recovery in Ukraine extends far beyond the needs of our country alone, as this process must demonstrate the advantages and effectiveness of the world's democratic model of socio-economic development as a whole in the face of global authoritarian regimes axis. It must demonstrate its ability to overcome external shocks and achieve economic recovery, as well as to preserve and expand the positions of democratic countries in the global economy. Euro-Atlantic economic and military solidarity with our country is fundamentally important for the implementation of a massive and resource-intensive process of Ukraine's economic recovery. The effective combination of internal and external factors of reconstruction is a condition for the successful socio-economic recovery of the country.

Massive economic recovery in Ukraine in the post-war period will enable the creation of a new, modern material and technical base for the development of the national economy as a whole, to develop existing and become the basis for the emergence of new competitive advantages for the country in regional and global markets. At the same time, the process of recovery also opens up new opportunities for continuing reform in all areas of the country's development and its further integration into the main economic and security European and transatlantic structures - the EU and NATO. Therefore, deep conceptual analysis and practical recommendations from well-known Ukrainian economists regarding the main prerequisites,

directions, spheres, stages, mechanisms, and expected results of Ukraine's economic recovery in the post-war period are very relevant already.

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FOREWORD

Given the objective needs of the post-war transformation of the economy and society in Ukraine, and taking into account the address of the President of Ukraine Volodymyr Zelenskyy to students and heads of Ukrainian universities of 19.05.22 on their vision of the transformation processes in Ukraine after the Russian-Ukrainian war, an international scientific and practical conference "Transformation Processes in Ukraine after the Russian-Ukrainian War: Interdisciplinary Assessments" was initiated. Its objectives were primarily to clarify the theoretical and methodological prerequisites and principles for the implementation of large-scale socio-economic and humanitarian transformations of a strategic nature in post-war Ukraine. The practical part of the transformation processes can be formulated after the victorious end of the war, when the real state of the objects under study becomes more or less known.

The conceptual dimensions of socio-economic transformations are reflected in Anglo-Saxon, French and German scientific doctrines, which in the latest version are embodied, in particular, in the "Washington Consensus". The transformation processes in China have led to another model of transformation called the Beijing Consensus. Perhaps, after the war is over, thanks to the efforts of our scientists and politicians, we will get a globally recognised model of the "Ukrainian consensus", which will testify to the new quality of not only the national economy and society, but also the new architecture of the world order.

The peculiarities of the transformation process in Ukraine include the following key issues and directions. Firstly, the need to comprehensively take into account the devastating consequences of the war, which implies a phased approach to addressing them in the short, medium and long term. Secondly, an in-depth analysis of the post-war state of the economy and society as a whole, as well as of individual units and spheres. Thirdly, consideration of the internal potential, including historical heritage, mentality, institutional capacity, intellectual and natural resources, etc. Fourth, studying the external environment of transformation (the European Union, Ukraine's geo-economic and geostrategic position). Fifth, the use of the synergistic effect of the nation's cohesion and the heroic feat of the

people during the Russian-Ukrainian war. Sixth, the widespread use of the experience of post-war transformation countries.

Dr. Anton Filipenko, Professor,
President of Ukrainian Association of International Economics

INTRODUCTION

Russia's war against Ukraine fundamentally changed the world. It will never return to its pre-war state. New geostrategic realities are manifested in all spheres of social activity - in the economy, politics, culture.

To resolve the war-caused problems in Ukraine, not only new economic mechanisms are necessary, but also new approaches to the selection of personnel, which will take into account high spiritual, moral and other human values on Ukraine's path to high-tech development.

Ukraine, like the recipients of the "Marshall Plan" at one time, must take decisive action for its own reconstruction and implementation of the high-tech development strategy. The effectiveness of this approach was proven by post-war Europe. South Korea too, within the lifetime of one generation, was able to move from a poor agrarian country to leading positions among the most developed countries in the world in terms of all main indicators.

Thus, the complex, long-term work of reforming and restoring Ukraine on a market-democratic basis has already started. This process, in fact, concerns all sectors of the economy and areas of the country's life. Therefore, we need a sufficiently detailed and specific program, coordinated with donors, which will allow to rebuild Ukraine on modern European foundations and gain membership in Euro-Atlantic structures.

Modern technical and scientific progress is taking place at such a fast pace that it makes absolutely no sense to simply restore what was before the war. Therefore, in reality, the post-war process in Ukraine would be more correct not to call restoration, but the creation of a new economic and production model that would meet modern conditions.

Post-war transformations will be influenced by the solution to the problem of joining the European Union and NATO. This will affect various aspects of the activity. Ukraine will need to adhere to certain standards and criteria (for example, currency and financial convergence criteria, which limit the ratio of public debt to GDP, the inflation rate, the cost of credit resources, etc.), which will be quite difficult to do in the conditions of a destroyed economy. The inclusion of Ukraine in the European market will require changes in the structure of its production. It is already obvious that the raw material-oriented and agricultural economy of Ukraine will not find a worthy place in the European Union.

On the other hand, Ukraine's post-war reconstruction presents not only

unique challenges, but also unique opportunities. The war caused enormous damage. But it freed the "construction site" from the outdated model of the economy and gave an opportunity to build a new one that would meet all the requirements of modernity. Under these conditions, both the theoretical understanding of the uniqueness of the problems that Ukraine will have to solve, and the justification of practical steps aimed at building a new model of the Ukrainian economy become especially relevant.

The author team of the proposed monograph "**Transformation and Post-War Economic Recovery of Ukraine**", which includes leading economists of Ukraine, offers an original study, the purpose of which is to develop models of the post-war revival of Ukraine both at the level of the national economy as a whole and in individual spheres of activity. Until now, neither in Ukraine nor in other countries has there been a comprehensive study of a similar problem, which would analyze the possibilities of recovery and competitive development of the main sectors of the economy.

The monograph consists of five parts. Part 1 "**Methodological principles of post-war reconstruction**" forms the general principles of developing models of post-war reconstruction. The authors summarize the existing historical experience of both Ukraine and other countries of the world regarding post-war reconstruction, as well as formulate methodological principles that are used in further research when analyzing the problems of various sectors of the economy.

The development of the post-war model of arrangement of Ukraine requires, first of all, significant institutional transformations. Part 2 of the monograph "**Institutional and political transformations**" is devoted to these questions. It covers issues of both general institutional transformations at the level of the state as a whole, and in individual areas. The justification of the new economic policy, which will be necessary for post-war Ukraine, stands out in particular. Recommendations for managing demographic processes and institutional transformations in the de-occupied territories are extremely important from a practical point of view.

The war caused the greatest damage to the real sector of the economy. Part 3 "**Transformations of the real sector of the economy**" is devoted to transformations in those areas that require new approaches. This, in particular, concerns energy. The war destroyed part of the power plants and energy infrastructure. However, they need to be restored on a new basis that would meet European standards. This applies to renewable and green energy. Ukraine has significant potential in this area and can become a major supplier of such energy to European countries.

The agriculture of Ukraine also suffers huge losses due to the decommissioning of a large part of the land as a result of mining. It takes a

lot of time and considerable effort to bring these lands back into economic circulation. This process should be accompanied by organizational and technological changes that would allow Ukrainian agriculture to successfully integrate into the European economy.

Transformations in the financial sector, which post-war reconstruction requires, are the object of research in Part 4 "**Reconstruction of the financial system**". How to restructure the monetary and credit policy to ensure the support of enterprises and their stable development in the conditions of post-war reconstruction? How to guarantee the country's economic and financial security? What role can digitalization play in these processes? The reader will find the answers to these and other questions in the chapters that make up Part 4.

The authors of the chapters included in Part 5 "**International aspects of post-war transformation**" examine, first of all, those transformations that will allow Ukraine to confidently move from a candidate to a full member of the European Union. Of course, Ukraine does not have enough resources to carry out post-war reconstruction. It will be necessary to attract foreign investments. And this, in turn, requires the construction of a new model of the international investment position. One of the chapters of this part is dedicated to the justification of the essence and ways of forming such a model. Of course, Ukraine should earn money on international markets. International tourism can be one of the directions of such earning. The monograph substantiates the development of tourism in the post-war period.

The problems that Ukraine will have to solve are unique. But this does not exclude the possibility of using the experience of other countries. For Ukraine, the most interesting and useful can be, in particular, the experience of Poland in joining the EU and NATO. The final chapter of the monograph is devoted to summarizing this experience.

Of course, the main focus of the monograph is the study of the problems of transformation and post-war restoration of the Ukrainian economy and it is mainly intended for potential practical participants in these processes. However, the authors are convinced that it will be interesting and useful to all researchers analysing the transformations of complex economic systems. Methodological approaches and practical recommendations can be adapted to the specifics of a country that is solving the problems of transformation and building an economic model that would correspond to new geostrategic realities.

Dr. Leonid Kistersky, Professor
Dr. Anatolii Zadoia, Professor
Scientific Editors

PART 1

METHODOLOGICAL PRINCIPLES OF POST-WAR RECONSTRUCTION

CHAPTER 1

SYSTEMIC DIMENSIONS OF TRANSFORMATION AND POST-WAR ECONOMIC RECOVERY OF UKRAINE

ANTON FILIPENKO

'Reformers mistakenly believe that change can
be achieved through brute sanity'
George Bernard Shaw

1.1. Systemic approach to the study of transformation processes

Russia's annexation of the Crimea and the separatist takeover of parts of Donetsk and Luhansk oblasts with Russian assistance have unbalanced Ukraine's relatively coherent economic system, which has not been properly installed since the collapse of the USSR. The full-scale Russian invasion in February 2022 and the Russian-Ukrainian war caused both the physical destruction of industrial and social infrastructure, a huge outflow of human resources from the country, and disrupted economic ties between industries (sectors) and regions of Ukraine. The post-war economic transformation aims to address two global challenges. On the one hand, the current economic system needs to be radically reformed to ensure that economic policy takes into account the needs and interests of local communities and the general population, and gradually eliminates the imbalance in the distribution and consumption of national wealth (Yi 2023). On the other hand, the technical and technological base of the production potential and social infrastructure should reflect the modern achievements of the 4th Industrial Revolution, the determinants of green and circular economies, etc. To achieve success in post-war transformations, taking into account all components of the whole, a systematic approach is proposed, which has proven its effectiveness in various fields of knowledge and in various areas of practice.

The systemic paradigm is known to have been founded in scientific works: L. Von. Bertalanffy (1901-1972), T. Rapoport (1911-2007), K. Boulding (1910-1993), R. Ashby (1903-1972), M. Mead (1901-1978) and W. Churchman (1913-2004). It is called General Systems Theory (GST) (Arbnor & Bjerke 2009, 102). As a transdisciplinary, interdisciplinary, and multi-perspective field, CST attempts to bring together principles and concepts from

- ontology,
- philosophy of science,
- physics,
- computer science,
- biology,
- engineering.

It also includes geography, sociology, economics and business, cybernetics, computer science, game theory and decision theory. Systems theory was founded on two fundamental ideas.

Firstly, all phenomena can be viewed as a network of relationships between its components, i.e. as a system. Secondly, all systems have common patterns, behaviour and properties that can be explained and/or understood to develop a deeper understanding of the behaviour of complex phenomena and move closer to the unity of science (Strijbos, 2017, 291).

The characteristic features of such systems are:

- complexity,
- informality of a number of processes taking place in the system,
- uncertainty of external conditions,
- incompleteness
- inaccuracy,
- unclear source information,
- the possibility of abnormal, critical, and emergency situations, considering risk factors, as well as incomplete, inaccurate and unreliable information. A systemic view is sometimes called a structural or holistic view, a systemic approach.

In addition to the systemic theory, there are also holism, reductionism, and structuralism. These three overlapping theories constitute a paradigmatic thinking that complements the systemic view.

Holism is the idea that all the properties of a given system (biological, chemical, social, economic, mental, linguistic, etc.) cannot be defined, explained, or understood as the sum of their components alone. In the second half of the twentieth century, holism led to systems thinking and its derivatives as the science of chaos and complexity. Scientific holism holds that the behaviour of a system cannot be perfectly predicted, no matter how

much data is available. On the contrary, the system determines the behaviour of individual parts.

Reductionism is sometimes seen as the opposite of holism. Reductionism in science states that a complex system can be explained and understood by reducing its fundamental parts.

Structuralism refers to various theories across the humanities and social sciences that share the assumption that structural relationships can be usefully stated and studied. More accurately, it can be described as a perspective in the disciplines that investigates the relationships between the basic elements in their fields, where these elements are constructed as tangible structures, economic structures and/or structural networks.

In the second half of the 20th century, structuralism spread to become one of the most popular approaches in the scientific fields related to the analysis of language, culture, and society. Structuralism can also be found in other fields such as psychology, linguistics, anthropology, sociology, and literary theory.

Structural thinking is also common in economics. Nevertheless, due to its nature of the ultimate search for better economic and human solutions, it is usually referred to as structural functionalism or structural realism (Ladyman 2017, 152-154).

Systems analysis is inherently interdisciplinary (Meadows 2023, 269). This is due to the following factors. Firstly, systemic principles, techniques and methodology are fundamentally applicable to the study of problems that are characteristic of almost all natural disciplines.

Secondly, system analysis should facilitate the study of the properties of relations between different objects, the study of the characteristics of relations between these objects in different conditions and situations, which is typical for the social sciences.

Thirdly, system analysis allows to consider the object under study from a holistic perspective, using for analysis both the properties of the system elements and the properties of the relations of interaction between the system elements.

Thus, system analysis is an agreed set of methodological principles, procedures and research methods.

It is the basis for dialectical cognition of the general properties and features of interdisciplinary systemic tasks and ways of solving them to obtain specific scientific and applied results in various fields of human activity (Fig. 1-1).

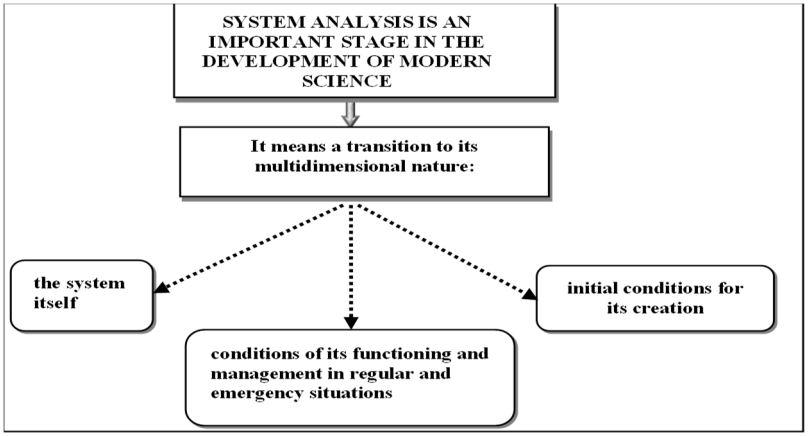

Fig. 1-1. System analysis in the development of modern science and practice

When applying systemic analysis, there is a need, first, for a multidimensional analysis of the preconditions for the emergence and development of the system, for example, the formation of the economic system of Ukraine after the collapse of the USSR. Secondly, a multidimensional system analysis of the system itself as an integral formed object (the current economic system of Ukraine) is carried out.

Basic concepts of classical system models

The systems approach has many variations in practice. From a methodological point of view, it can be summarised when explanations and understandings use a systemic view, a basic systemic language, and typical theoretical results from a systemic perspective.

Every system has the potential to be demonstrated and used at any given moment. This is a confirmation of the law of the necessary diversity of systems, which was formulated long ago in systems theory. It states that systems must have at least as many possibilities as their environment in order to survive. We are talking about such varieties as components, states, events or behaviours that characterise a system.

Let’s highlight some important concepts of the classical system model (Fig. 1-2).

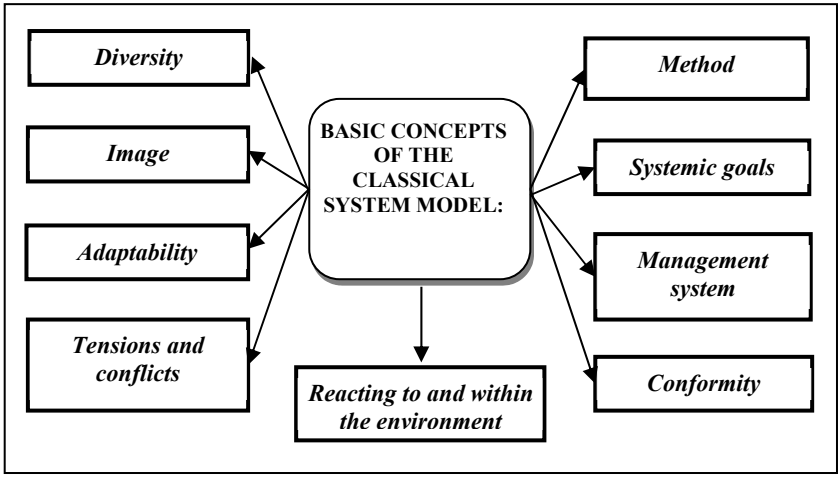

Fig. 1-2. The concept of a classical system model
Source: Arbnor & Bjerke 2009, 107-109.

Let's explain the essence of the concepts of the classic systems model.

Diversity. Diversity means that a system, in order to survive, must be at least as diverse as its external environment (resources, institutions, etc.).

Conformity. The ability of the system to "reproduce" the positions of the environment, the ability to become "similar" to something from the environment, e.g. the fulfilment of the Maastricht criteria for convergence with the EU by the EU candidate countries.

Adaptability. Systems are adaptive. To be so, they need:

a) a certain degree of plasticity and sensitivity to the environment, ensuring constant interaction with what is happening there, taking it into account and responding to it when necessary;

b) the search for additional sources of diversity mechanisms. This means dealing with the problem of compliance and, if necessary, introducing new or more detailed diversity in a changing environment, e.g. the implementation of the EU-Ukraine Association Agreement requires the transposition of European norms and standards into national legislation;

c) a set of selection criteria or mechanisms by which the 'source of diversity' can attract into the system variables that reproduce the environment well and reject those that do not;

d) the means to maintain and develop successful reproduction.

Tensions and conflicts. Certain contradictions can exist in all systems, including economies. Systems that function well can use them to

a) gain information about what is happening in the environment (what caused resentment, for example, the delay in implementing the grain deal caused by the Russian Federation during the Russian-Ukrainian war of 2022-2023);

b) get new ideas for relevant actions by deviating from existing ambitions;

c) implement new, more targeted measures.

Systemic goals. One of the results of the systemic aspect is the realisation that it is possible to talk about a system without referring to its parts. For example, you can talk about the system of a company and then define that system as having goals. There are many assumptions about what goals companies have and can have. In general, it is desirable to combine hard financial goals, such as cash flow, profit and sales, with softer goals, such as social and environmental goals.

Management system. People-managed systems do not develop by themselves. They are the result of deliberate efforts within a company's 'management subsystem'. By studying this subsystem, the researcher can get an explanation of how the system works.

Combination. Two or more interacting systems and subsystems that cooperate and support each other and fit together well. Systems that destroy or disrupt each other do not fit well. To survive, the system must evolve to fit the environment with all its changes, and it must evolve subsystems that fit each other.

Reacting to and within the environment. Open systems are dependent on their environment, which means that it is important for them to interact with the environment in a purposeful way to establish purposeful behaviour and behave accordingly.

Performance. Every social system has participants who gradually form intellectual clichés about how to manage their activities, taking into account the environment in which they work.

Thus, the description of the nature, place and characteristics of the components of the classical system model allows us to move on to system analysis, its forms and methods, and its role in the transformation processes and post-war economic recovery in Ukraine.

Main approaches to system analysis

System analysis can be interpreted as an applied scientific methodology, the arsenal of tools of which is based not only and not so much on axioms, but also on *heuristic methods*, techniques, and algorithms. Unlike axiomatic disciplines, system analysis sets the exact opposite research goal: there is a practical task for which physical, technological, economic and other

limitations are known. It is necessary to find a system of techniques and methods that will allow to obtain a solution to the problem: with acceptable accuracy, within an acceptable time, at an acceptable cost of all types of resources (*input-output system*).

When solving real practical problems of system analysis, a researcher often operates with such important concepts as objects and models. They have quite precise and unambiguous definitions in traditional disciplines.

However, in systems analysis, these generally accepted concepts are significantly supplemented and expanded in terms of their relevance:

- modern specificity of problems and tools of system analysis,
- peculiarities and properties of the subjects of systemic research,
- conditions and peculiarities of formalisation and solution of systemic problems.

Typology of systems

A system is an ordered set of structurally and functionally interdependent elements that can be complex and large. The criteria for typology of systems are two main concepts - structure and function (Fig. 1-3).

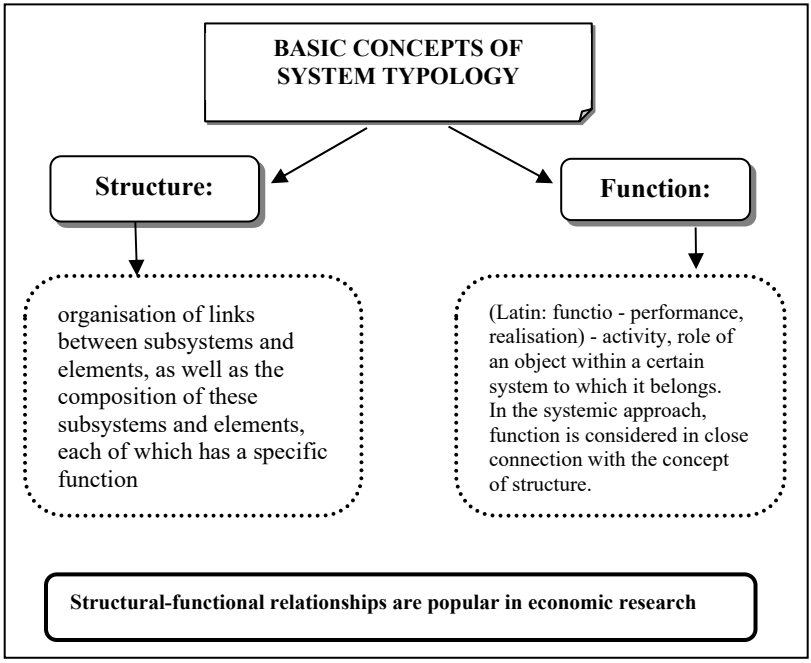

Fig. 1-3. Criteria for typology of systems

A system is a set of components that can be attributed to subsystems and the relationships between them. The definition of systems requires some additions: the components of systems are in inevitable interaction with each other. To explain or understand an individual component, it is not enough to study the component in isolation. Accordingly, in order to explain or understand a system, it is sometimes necessary to place it in its own context or environment; this allows us to distinguish between open and closed systems. Open systems are studied in the context of their environment; closed systems do not interact with their environment. An economy is usually not a closed system. In particular, Ukraine's economy is an open system because its exports account for about 50% of its gross domestic product.

Thus, the system environment is what lies outside the system's "boundary". This environment is generally seen as external factors that are important for the system to consider, e.g. for the Ukrainian economy - the EU is a priority external environment.

There are eight characteristics that serve as a template for all social organisations that are considered open systems:

1) The system imports energy into itself from the environment. Energy consists of resources, raw materials, competence, etc.

2) The system processes resources and transforms them into products that are delivered in various forms to the environment.

3) Activities are cyclical; there is a dependent relationship between the input and output of the system.

4) Negative entropy in living systems means that they tend to decay. This process is counteracted by organising the import of resources and energy from the environment.

5) Information and feedback allow you to control the organisation's activities within certain critical limits.

6) The balance (homeostasis) between different components of the system must exist in such a way that the interaction with the environment is maintained.

7) Differentiation, integration, and coordination are necessary when forming complex relationships with the environment and trying to implement external parameters into the system's own structure.

8) A system can achieve its goals in different ways. It can reach the same result through different types of structures.

The systemic approach formulates the law of necessary diversity.

Its essence is that for the system to survive, it must have at least as much diversity as the external environment (Arbnor and Bjerke 2009, 107-108).

The sources of the diversity mechanism can be improving its own position or introducing more diversity if necessary; introducing selective criteria, which in the diversity mechanism reflect the external environment well and which do not. For gradual but steady approximation to the EU, Ukraine must meet the Maastricht criteria for economic accession and the Copenhagen criteria for social cohesion. In addition, the main provisions of the EU-Ukraine Association Agreement and the EU's requirements for Ukraine as a candidate for membership in the Union must be fulfilled. At this stage, the latter are of decisive priority.

Many theories of the systemic approach clarify how the system should act in a given environment. Thus, N. Luhmann, considering the interaction of the system with the external environment, uses the term systemic rationality and proposes several strategies for such interaction (Luhmann 2011, 149-153).

Firstly, for the sake of its own positioning in the highly complex world around it, the system replaces the objective situation with a subjective one.

In searching for sources and mechanisms of post-war economic recovery, Ukraine pursues a selective strategy of interaction with the outside world, focusing primarily on strategic partners and allies, institutionalising these relations through conferences and joint development of economic programmes and projects. Secondly, a functionally equivalent strategy should take into account the time and content dimensions, as the need for economic recovery exists now during the hostilities, without waiting for the war to end.

Thirdly, as N. Luhmann emphasises, the basic strategy is not only the differentiation of the world around us, but also the internal differentiation of the system. Its essence is, on the one hand, to document the destabilising influence of the world around us, in our case, Russian aggression, and, on the other hand, to adapt the national political, socio-economic, and institutional systems to the EU in accordance with the Maatricht and Copenhagen convergence criteria and to build a military system in line with NATO requirements.

These strategies are functionally equivalent and are almost always used in combination.

Here is just one example of the necessary diversity of the system: the more complications there are from the outside, the more flexible the system should be from the inside. This was the case during the global financial crisis of 2008-2009. The massive homogenisation (homogeneity) of the global financial services industry deprived the system of natural stabilisers that could have replenished the markets with capital during the crisis. Homogenisation or mono-dimensionality meant that all bank balance sheets