

Analysis of the “sustainable development” concept

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Abstract. The article presents the results of the study of the essence and specificity of the term "sustainable development", as well as the development of its author's vision in modern realities. Currently, sustainable development is one of the key trends in the development of the world. At the same time, it affects almost all aspects of society and the state. It is explained by the fact that it is based on three important areas: economic, environmental and social. However, there are both opponents and supporters of the concept of sustainable development. The greatest success in implementation in practice and scientific results have been achieved by researchers in developed foreign countries: Europe, USA, Japan, etc. At the same time, there is no unified position in the essence and peculiarities of such a complex interdisciplinary category. The purpose of this work was to develop an adequate approach to assessing the modern interpretation of the term "sustainable development". The study is based on the work of many domestic and foreign authors. The main method of work is analytical. The results obtained - a detailed analysis of the development of approaches to the studied terminology, allowed us to formulate the author's current approach to this concept.

1 Introduction

The development of civilisation involves the development of all internal processes and of society as a whole. Many aspects of society's existence are affected. The social consciousness also develops. There are different approaches to understanding the needs and values of society and civilizations [1]. It should be noted that historically, in the early stages of states, civilizations, needs are of a more "primitive" nature - security, subsistence and other basic needs. With the development of societies, they become more and more complex [2]. In parallel, science, culture, art, etc. develop. Society is striving for more comfort and a redefinition of life's values is taking place. Philosophy, which has a history of thousands of years, makes it possible to evaluate what is happening and provides a rationale for the future in the life of states. As society's needs and demands grow, the volume and structure of consumption of various resources begin to change [3]. This in turn leads to global social, economic and environmental problems: wars, famine, social inequality, environmental disasters, ethical problems. In the twentieth century, with the increasing population on the planet, these problems became significantly more acute and created a systemic crisis that

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requires a fairly rapid solution. In today's world, a systemic theory has emerged and is being promoted at various levels, the aim of which was to solve many of the existing and foreseeable problems. Its name is the concept of sustainable development.

This work is devoted to the study of the essence and specificity of this concept, as well as the development of its author's vision in modern realities.

2 Materials and Methods

The purpose of this paper is to investigate the concept of "sustainable development" and the main approaches to its interpretation, as well as to develop the most adequate description of it at the current time.

The aim is to identify the peculiarities of the historical development of approaches to this term, differences in national concepts of sustainable development, as well as the current understanding of its essence.

The study is based on the works of well-known authors in the field of sustainable development.

3 Results and Discussion

Philosophers as far back as ancient Greece argued that the consumption of natural resources should be limited, as there is no limit to how much they can be used. However, Thomas Robert Malthus, an English economist and priest from the early 18th century, can be regarded as the originator of sustainable development theory, arguing that due to population growth and the resulting increase in food production, a global socio-economic catastrophe could occur in the future, leading to such negative political manifestations as revolutions and wars.

The idea of depleting natural reserves and limiting the growth of consumption and production was actively approached by society in the 1970s, when the report "Limits to Growth" was presented by the Club of Rome in 1972, which reflected Thomas Robert Malthus' assumptions about the future possible social, environmental and economic problems of humanity and described the scientific rationale for the impact of population growth on the consumption of natural reserves [4].

This report also introduced, for the first time, the term "sustainable development" itself, for which it is important to take into account social and environmental aspects in addition to economic ones.

This paper, authored by Donella H. Meadows, Dennis L. Meadows, Jørgen Randers, and William W. Behrens III, was a kind of mathematical model of the consequences of the interaction between man and nature, and presented 12 scenarios, five of which contained unfavourable forecasts of the future development of mankind, caused by increased consumption and leading to a sharp demographic decline in the number of population due to the limited and depleting natural reserves themselves [5]. Seven of them suggested a favourable outlook, subject to humanity's awareness of the need to address the socio-demographic and environmental problems associated with increased production and consumption of natural resources.

In 1972, the United Nations began discussing global environmental problems, the results of which were reflected in the UN Environment Programme and formed the basis for the scientific and practical development of the Sustainable Development Concept.

Next, we turn to the analysis of the very concept of sustainable development, which has been at the heart of international, national and regional policies in many countries for decades.

Most scientists associate the appearance of the term "sustainable development" in economic theory with the name of the outstanding Russian politician, statistician, agrarianist and economist-geographer of the XX century N.P. Oganovsky who investigated the regularities of historical evolution of agriculture and sustainable development of productive forces in the context of political, social, demographic and ecological aspects of world-historical process.

It can be said that N.P. Oganovsky's theory of sustainable development of productive forces, which was built by him on the basis of a comparative historical analysis of Western and Russian agrarian and technological conditions, in many respects anticipated most international discussions on the specifics of sustainable development related to the influence of environmental factors on socio-economic development of society.

The term 'sustainable development' originated as a translation of the English term sustainable development, and was borrowed from nature management, in particular the term was widely used by fisheries and forestry professionals. For example, Canadian fisheries managers understood sustainable development as a renewable fisheries production system and German foresters used it to refer to renewable forest resources. In this approach, fisheries, forests and many other resources can be exploited for a very long time. This is indicated by the adjective sustainable, which in addition to sustainability implies that a process is lasting and can be continuously reproduced.

Subsequently, the term 'sustainable development' became widely used not only in local but also in global ecology.

In the 1980s, the term 'sustainable development' began to appear in scientific terminology. It gained considerable popularity after the report of the International Commission on Environment and Development (ICED) "Our Common Future" (1987). The Commission was chaired by the Norwegian Prime Minister Gro Harlem Brundtland. The Commission was established by the United Nations in 1983 to investigate the relationship between contemporary human society and nature, the rapid deterioration of the environment, the effects of human activity on the environment and how to normalise these effects. The UN General Assembly endorsed the Commission's concern with environmental issues and the deterioration of social and economic development and recognised these problems as being of immediate importance to all countries and requiring immediate political solutions for the sustainable development of all societies. The Brundtland Report marked the beginning of a global transition towards sustainable development [6].

The Brundtland Report proposed the following definition: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [7]. [7].

The Brundtland Commission's definition of sustainable development focuses not so much on the limitations of natural resources themselves, but on the impact of anthropogenic factors on the biosphere, and at the same time is systemic in nature, which may lead to irreversible negative consequences in the future.

This definition has been criticised by the scientific community, which has argued that it is not clear-cut and is primarily anthropocentric. Most scientists insisted that the concept of sustainable development should include preservation of natural environment first of all. At the same time, researchers specified that humanity's actions to improve the quality of human life should not go beyond the biosphere's capacity.

There are many approaches to the definition of sustainable development, which is due to the complexity of the concept, which includes various aspects of social development: economic, social, environmental and others. There are many approaches to defining sustainable development, due to the complexity of the concept, including various aspects of societal development: economic, social, environmental and others.

Thus, several approaches to defining this concept can be distinguished, including primarily its economic component:

- development that does not impose additional costs on the next generations;
- Development that minimises negative phenomena, intergenerational externalities;
- development that ensures constant simple and/or expanded reproduction for the future;
- a development in which humanity should exist only on the interest of natural capital, without affecting it itself.

The notion of "sustainable development" as formulated by the International Commission on Environment and Development has been criticised many times and numerous attempts have been made to change it, to improve it or to propose a new one. However, scientists have not come to a common interpretation and none of the proposed concepts has ever become definitive. Most of the discussions on the definition have been theoretical.

In 1992 the Conference on Environment and Development in Rio de Janeiro adopted the main document of this major world forum, Agenda 21, where the key term was sustainable development. In this document, the focus was on the emergence of new economic, social and environmental problems, in one way or another, related to sustainable development, since it is in the economy and society that environmental problems originate, and therefore it is necessary to study them in an integrated manner and adopt appropriate solutions. The enormous role of both society and the individual in transforming the state of the environment has been demonstrated. New technologies are needed to make more efficient use of natural resources, which will contribute to achieving sustainable development, aiming to maintain a balance between human existence and consumption.

Speaking about the concept of "sustainable development", it should be noted that there is no consensus among scientists on the accuracy of the translation of this category, reflecting its essence more fully. Many scientists criticize the Russian translation of the English word combination sustainable development, where sustainable is translated as supported, managed, acceptable, uninterrupted, lasting, balanced, harmonious, continuous, etc., and development - as development, elaboration, creation, development, formation, construction, event, improvement, growth, expansion, deployment, improvement, design, evolution, improvement, manifestation, etc.

However, the translation of 'sustainable development' from other European languages such as French and German is not perfect either. The French *dveloppement durable*, for example, is translated as durable development, which is closer to the meaning of long-term, durable, reliable, lasting development. The German translation of the phrase "nachhaltige Entwicklung" sounds like a steady, sustainable development, elaboration, creation, deployment, modernisation, project, design, change, etc.

That is, no translation gives an unambiguous understanding of this term and does not reflect such an important semantic load as continuously maintained development, on which the critics of the Russian translation insist. In the author's view, the current interpretation of the term "sustainable development" implies constant, unchanging growth. At the same time, such growth in itself is self-sufficient, it continues through time and is in no sense opposed to the existence of humanity. That said, it is clear that the conflict between current industrial development and the principles of "sustainable development" not only exists but will only increase.

There is also a contradiction that many critics have emphasised. It is about the components of the term: 'sustainable' and 'development'. The first is a characteristic of stability, immutability, preservation of a certain state. The second, on the contrary, is change, growth, modernization. Thus, these two components are mutually exclusive. The opinion of L.G. Melnik [8] can be highlighted. He argued that the term "stability" is characterized by equilibrium, and "development" comes only when the system leaves its equilibrium state. Therefore, "something has to be given up: either development or stability".

A similar point of view regarding the contradiction in the words "stable" and "development" can be found in the definition of these concepts in the "Explanatory Dictionary of the Russian language" by S.I. Ozhegov, who describes "stability" as stability, constancy, that is, not being subject to any changes. Development is "a process of regular change, transition of an initial state to another, more perfect state; transition from an old qualitative state to a new one, from simple to complex, from lower to higher".

Many experts, including Academician N.N. Moiseev, also believe that the translation of the term sustainable development as "sustainable" development is not quite correct, however, its replacement is not possible, due to the fact that it is already widely used both in science and in practice. The author himself defines sustainable development as "the realization of human strategy, its way to the noosphere era, that is, to the state of coevolution of society and Nature". A.D. Ursul understands sustainable development as "the managed development of society that does not destroy its natural basis and ensures the survival and continuous development of civilization". [9].

It is also possible to meet such approaches to the definition of the concept as "sustainable development" - it is [10-13]:

- improving the quality of life of people living within the carrying capacity of supporting ecosystems;
- Manageable development of a society which does not destroy its natural base and which ensures the continuous progress of civilization;
- a multi-level hierarchical controlled process of coevolutionary development of nature and society (with the mass and conscious participation of the population), which aims at providing a healthy, productive life in harmony with nature for present and future generations based on the protection and enrichment of the cultural and natural heritage;
- creating a sustainable economy that meets human needs by eliminating the extraction of resources or production of waste beyond the regenerative capacity of the environment
- the creation of social institutions that will guarantee security and the possibility of social, intellectual and spiritual growth.

Thus, having analysed the different approaches to the analysis of the term 'sustainable development', we can conclude that today there are a huge number of views on its definition, which are proposed by both individual scientists and various civil society organisations.

We can separately highlight the definition given in the World Conservation Strategy. Here, sustainable development is development that actually improves the quality of life of people while preserving the nature of planet Earth. The Earth Charter interprets sustainable development as "the need to apply production, consumption and reproduction patterns which preserve the Earth's regenerative capacity, human rights and the well-being of communities.

According to the Russian legislation, "sustainable development" implies "improving the standard of living and quality of life of the population on the basis of scientific and technological progress, dynamic development of the economy and social sphere while preserving the reproduction potential of the country's natural complex as part of the Earth's biosphere, as well as the technological potential in the interests of the present and future generations".

Also, in the course of the study, the authors formed a vision of a generalized scheme for the development of enterprises in the context of sustainable development (Fig. 1).

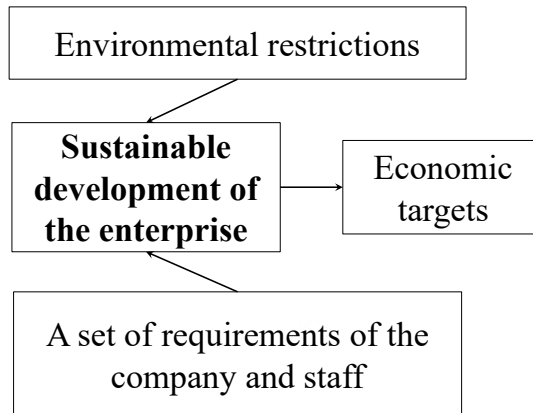


Fig. 1. Generalised scheme for enterprise development in the context of sustainable development.

In the author's opinion, the most complete modern essence of the term "sustainable development" can be described as follows: it is non-destructive to the natural bases of social development, not leading to the degradation of human life conditions formed by it and not threatening the security of society social destructive processes [14-15].

4 Conclusion

The study reveals that sustainable development is currently a complex category that has been studied in many works. Various authors, academic groups and government agencies are diligently studying and adding various objects and tools to the concept. It is also clear that without a transition to the principles of sustainable development, the modern world would face many global problems in the very near future, which could lead to disastrous consequences. Certain states, including Russia, have adopted these principles as a strategic basis for their development. But there is still a long way to go before they are put into practice and put into practice. At the same time, the sustainable development is not only and not so much the implementation of the various programs and projects by the governmental agencies, as the wish and need of the society, each man in a clean environment, favorable conditions of existence for his own and his children and future generations. Thus, only the joint efforts of the state and society can lead to the implementation of the principles of sustainable development. Based on this approach, which is fully supported by the authors of this study, it is possible to formulate the most correct definition of the term "sustainable development". It can be understood as a set of measures aimed at meeting the current needs of society and the state while preserving the environment and resources, in other words, without compromising the ability of future generations to meet their own current needs.

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References

1. M. Bowden, *Futures* **132** (2021) doi: 10.1016/j.futures.2021.102783
2. K. B. Taylor, *Futures* **122** (2020) doi: 10.1016/j.futures.2020.102582

3. J. Hu, M. Hu, H. Zhang, *Environmental Technology & Innovation* **29** (2023) doi: <https://doi.org/10.1016/j.eti.2022.102960>
4. G. Turner, *A Comparison of «The Limits to Growth» with Thirty Years of Reality. Commonwealth Scientific and Industrial Research Organisation (CSIRO, Canberra, 2008)*
5. D.H. Meadows, J. Randers, D. L. Meadows, W. W Behrens, *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind* (Universe Books, 1972)
6. S. Arora-Jonsson, *Futures* **146** (2023) doi: 10.1016/j.futures.2022.103087
7. S. Toniolo, C. Pieretto, D. Camana, *Environmental Impact Assessment Review* **101** (2023) doi: 10.1016/j.eiar.2023.107126
8. V.V. Lepikhin, K.A. Uzhegova, *Conceptual approaches to the study of sustainable development of the enterprise as an eco-socio-economic system* (Perm national research polytechnical university, 2014)
9. E.G. Kovalenko, T.M. Polushkina, O.U. Yakimova, E.V. Avtaykina, O.O. Zaitseva, K.S. Sedova, *Modernization of the mechanism of sustainable development of rural areas* (Academy of Natural Sciences, Moscow, 2014)
10. *Caring for the Earth: A Strategy for Sustainable Living. World Wide Fund For Nature* (1991)
11. M. Hametner, *Ecological Economics* **199** (2022) doi: 10.1016/j.ecolecon.2022.107490
12. S. Medvedev, M. Zyryanov, *E3S Web of Conferences* **376** (2023) doi: 10.1051/e3sconf/202337601074
13. F. Comim, T. Hirai, *Ecological Economics* **198** (2022) doi: 10.1016/j.ecolecon.2022.107470
14. V.I. Danilova-Danilyan, N.A. Piskunova, *Sustainable development: New challenges* (Aspect Press, Moscow, 2015)
15. H.H. Salo, A. Berg, K. Korhonen-Kurki, S. Lahteenoja, *Environmental Science & Policy* **128**, 242-255 (2022)