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The decline of technogenic civilization: Sufficient development strategy

P. A. Vodop'yanov[1], *A. N. Danilov*[2]

[1] Belarusian State Technological University,
13a, ul. Sverdlova, Minsk, 220006, Republic of Belarus
[2] Belarusian State University,
4, pr. Nezavisimosti, Minsk, 220030, Republic of Belarus

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The first quarter of the 21st century was marked by global instability. Sharp climate changes, biodiversity loss, exponential population growth, a lack of natural resources and living space, environmental pollution form a complex of current global issues that pose a threat to the humanity's future. The article demonstrates the destructive nature of the established consumer vector of development, which underlies the modern economic model, and also reveals the negative aspects of scientific and technological progress that led to the global environmental crisis. Overcoming these negative trends presupposes the choice of new strategies for socio-economic development, which are based on its alignment with the laws of evolution of the biosphere. The achievement of a secure future implies the preservation of natural ecosystems considering their ability to self-repair disturbed processes within the economic capacity of the biosphere, since its excess leads to a violation of the biological cycle of energy and matter, and to the ecological imbalance in the biosphere. Taking into account the patterns of conservation of natural ecosystems and the biosphere as a whole, the authors propose the strategy of sufficient development, and determine related implementation measures. They include development of environmentally safe technologies and the approval of a new humanism as a necessary condition for achieving a secure future. The authors argue there is a need in the radical revision of value orientations in order to achieve a secure future. This revision presupposes redirecting people from the anthropocentric orientation in relation to nature to the bio-anthropocentric orientation, which takes into account the need to preserve nature and the spiritual world, and preserves the moral foundations of the development of society.

Keywords: natural environment, strategy of sufficient development, future of mankind, ecological crisis, new humanism.

Introduction

At the end of the twentieth century, it was possible to observe a decrease in environmental protests for the purity of the Planet. In the same period, the active struggle for its recovery had ended. The highest point of the rise of such protests can be considered the UN Conference on Environment and Development in Rio de Janeiro (Brazil) in 1992, which was held at the level of heads of states and governments. Everything that was said and accepted at the conference about environmental hazards has not lost its relevance today, and in some areas the situation has significantly worsened. This is especially true of industrial development, careful conservation of natural non-renewable resources and understanding of the fact that the regenerative abilities of nature are not unlimited. In the last decade, the arms race has again prevailed. Samples of new equipment are created on a fundamentally new technological basis, and environmental costs are not always taken into account. A formidable reminder of human recklessness is the Chernobyl nuclear power plant, which has been disposed of for almost four decades. In the period of modern geopolitical showdowns, the struggle for resources has escalated to the limit, and the environmental factor is becoming a bargaining chip, but humanity does not solve the problems of cleansing the natural environment for life and development.

The accumulation of unresolved problems, new challenges and conflicts in the first quarter of the 21st century — all this can be described as a state of global instability in the world. In this series of problems, the constant growth of the population, limited natural resources and living space, pose a particular danger. Thus, over the past 100 years, the population has more than doubled and is approaching 8 billion people. At the same time, the population size is fundamentally different in developed and developing countries.

In these extreme conditions, the points of growth of a new civilization are crystallizing. There the main challenge is developing of a new vision of the role of the natural environment in the life of mankind. "At the end of the twentieth century, when humanity faced global problems, questions about the correctness of the choice of development paths adopted in the Western (man-made) civilization, and, as a result, about the adequacy of its ideological orientations and ideals, sounded with renewed vigor" [1, p. 484].

Habitat conservation and humanity's perspective

The severity of the current environmental situation, crisis phenomena in the economic, political, spiritual and other spheres of life of modern society has been constantly increasing since the beginning of the 21st century. This indicates that the future of the planet depends on the choice of directions for the further development of humanity. The achievements of scientific and technological progress made it possible to achieve high living standards and at the same time led to the fact that human activity as a result led to the destruction and degradation of nature and human habitat. "The new state of civilization is a sharp turn in the development of its value content. In a situation of changes that significantly activate the process of selecting a new context in culture, there is a desire for a rapid renewal of basic values without proper historical and social selection, which can create an illusion. There is a danger of going down the wrong path and forming a distorted image of the future. The original conservatism of culture and its bearers are largely justified here" [2, p. 19]. In such conditions, the future of humanity depends on whether humanity will be able to cope with the existing dangers…

Such dangers did not occur in the past, although problems such as lack of food and water resources led to the death of many civilizations. For example, the death of the Sumerian kingdom was caused by soil salinization, which led to a shortage of grain crops (wheat and barley). A similar thing happened, in all likelihood, with the Maya civilization. Currently, soil erosion also leads to the depletion of land fertility up to 30 % of the acreage. Such negative phenomena as forest fires, soil erosion, depletion of aquifers, the onset of deserts, drought, melting glaciers, irrigation and much more are dangers for modern civilization.

For this reason, currently, there is an urgent need to change the vector of socio-economic development, which ignored the danger of degradation and destruction of nature until recently. The desire of humanity to free itself from dependence on nature, which became possible thanks to the achievements of scientific and technological progress, as well as ignoring the laws of the evolution of the biosphere, led to high living standards in Western countries. At the same time, this circumstance inevitably affected the deterioration of the quality of the environment. The purely consumer vector of socio-economic development with all the acuteness raises the question of the prospects for the near future of civilization.

Under modern conditions, a new vision of the role of the natural environment is being formed. It begins to be regarded "not as a conglomerate of isolated objects, and not even as a mechanical system, but as an integral living organism, the change of which can take place only within certain limits. Violation of these boundaries leads to a change in the system, its transition to a qualitatively different state that can cause irreversible destruction of its integrity" [1, p. 484–485].

Today, the future of civilization depends on the world community's choice of possible strategies. One of them is to maintain intensive economic growth leading to environmental destruction. Another strategy is new and involves the coordination of socio-economic development with the laws of the biosphere. Unfortunately, such signs of the global environmental crisis as the destruction of the ozone layer, numerous floods and fires indicate that the first strategy is still preferred. In this regard, modern environmental policy should set as a key task the formation of new value orientations that are focused on the implementation of a co-evolutionary strategy for the development of society and nature.

After "the ideas of wildlife as a complex interaction of ecosystems were formed and entered the scientific picture of the world, after the formation and development of the ideas of V. I. Vernadsky about the biosphere as an integral system of life interacting with the inorganic shell of the Earth, after the development of modern ecology, this new understanding of the immediate sphere of human life as an organism, and not as a mechanical system, has become a scientific principle, substantiated by numerous theories and facts" [1, p. 485]. Changes in value orientations and thinking are also relevant in connection with the need to ensure stable socio-economic development, taking into account rational natural resource consumption. However, currently, the greatest achievements of science have been used and are being used, first of all, for military purposes to seize other people's wealth and resources. One can observe it in different periods ranging from the Age of Discoveriy, the seizure of colonies and ending with new forms of neocolonialism and the spread of hostilities in various regions of the planet.

Further progress in the field of scientific and technological achievements (genetic engineering, nanotechnology, robotics, etc.) is fraught with unpredictable consequences

and abuse. It is possible to avoid such dangerous trends only if new value orientations take into account the requirements of the laws of the biosphere and determine the possibility of the formation of a new civilization. A. D. Ursul suggested one of such ways of formation of a new civilization. His concept of the purposeful formation of a noospheric civilization, which expresses "a qualitatively new state in which, on the path of its intensive transformations, society will enter into co-evolution with nature, humanitarian and universal values will become a priority and the integral intelligence of humanity will ensure its transition from a spontaneous slide to a global catastrophe to survival and effectively managed, sustainable and safe development" is relevant and to this day" [3].

The achievement of this goal is possible on the basis of the approval of new moral values focused on the revision of motives and cognitive models of human activity. This stems from the severity of the current environmental situation, the increase in social upheavals in the spiritual, social and political spheres of society. To achieve this goal, it is necessary to set tasks for the formation of a new biosphere thinking and educational society…

Our analysis shows that serious developments are also taking place in the post-Soviet space. Over the past decade, Belarusian society has undergone a significant evolution from the values of survival and stability to the values of self-expression and development. In these conditions, the mission of education is changing, which appears not just as a secondary branch, but as a system-forming part of the national culture. "The unification imposed on us inevitably reduces the quality level of education, as it suggests focusing on the average level. Therefore, when we talk about the integration of the educational process, the idea of enriching with quality and advantages should be put at the forefront" [4, p. 414].

The development of ecological thinking is closely connected with the formation of a new humanism. This humanism is focused on the formation of a worldview and lifestyle that affirm the priority value of a person in relation to himself and other people, as well as awareness of the value of all living beings, relative value or equality in relation to other people, society and nature. Still existing orientation on the absolute priority of technological and technical discoveries cannot be recognized as a justified one, since the achievements of science and technology that have turned human activity into a huge geological force incommensurable with the action of natural forces of nature, have led to crisis phenomena of a truly global nature. The scale of this activity is so significant in its magnitude that the biosphere is unable to neutralize its consequences, which undermine the mechanisms of self-regulation of natural ecosystems. For this reason, discoveries in science and technology should contain a moral dimension in terms of ensuring the normal functioning of people, their psychological comfort and aesthetic human needs. Modern ideas about the absolute priority of technological and technical discoveries can be called not only hypertrophied, but also unfounded, since the criteria for their effectiveness contradict the normal course of natural processes. Based on this, it can be concluded that the solution of environmental conflicts in the relationship between society and nature is not so much connected with the solution of social, economic, political and even geopolitical problems, but with the need for a radical change in people's consciousness, their worldview and values.

One of the possible ways of civilization development is a co-evolutionary strategy, which is based on the idea of a balanced evolution of society and the biosphere. The implementation of this strategy involves changing the vector of socio-economic development towards limiting the scale of human activity, which is one of the causes of degradation

and destruction of natural ecosystems. From the standpoint of the evolutionary strategy, it is necessary to switch to an intensive path of economic development associated with an increase in the productivity of resources, their economical consumption and utilization.

This goal can be achieved thanks to the widespread introduction of the latest technologies into the production sector, which allow the rational use of the extracted raw materials. More broadly, it is important to ensure that the volume of consumption of natural resources is compensated by their reproduction and artificial restoration. Prevention of such negative phenomena as environmental pollution presupposes, firstly, the need to create environmentally safe natural-type industries that can significantly reduce environmental pollution, and secondly, the introduction of bans on certain types of activities that lead to negative consequences. Otherwise, irreversible changes will occur in the ecosystem, leading to its degradation.

Knowledge of such trends determines the choice of a co-evolution strategy, which is based on the coordination of the scale of human activity in accordance with the possibilities of nature. This strategy is focused on the future and involves changes in all spheres of life, especially in the field of education, which contributes to the formation of moral and behavioral norms and guidelines with a focus on preserving the biosphere. "New worldview ideals of attitude to nature, based on a new ethics that rejects the principle of domination over nature and includes the ideas of human responsibility, pave the way for a new understanding of rationality as a dialogue between man and the world" [1, p. 488]. Only under this condition it is possible to implement proactive management actions aimed at preventing crisis phenomena in life.

Sufficient development strategy

At present, humanity has come to a dangerous point of bifurcation, when people's activity based on scientific and technological achievements can lead to their own death. "History will inevitably give rise to a new paradigm of development, which will result in a radical reassessment of values and a new way of life" [5, p. 11]. In this regard, the use of accumulated knowledge and positive experience of past generations, overcoming the negative consequences of human activity, the assertion of value and spiritual orientations are the basis for determining the socio-economic development of a country and the entire world community. The prevailing anthropocentric orientation towards nature should give way to a new paradigm which is based on a bio-anthropocentric orientation that takes into account the need to preserve nature and the spiritual world, preserve the moral foundations of society's development. The attribute of consumerism, acquisitiveness, personal enrichment and success, reliance on power and absolute freedom are the main obstacles to achieving a secure future. The main directions of the co-evolutionary strategy of sufficient development are determined, on the one hand, by the subordination of the human to the laws of nature, and on the other hand, by the search for means to overcome the dangers of negative results of scientific and technological progress.

Sufficient development strategy (SDS) involves the implementation of the following measures.

— Population regulation.

— Reducing industrial pressure on the biosphere through the introduction of nature-like technologies.

— Economical use of natural resources, their replacement with artificial ones; increasing the productivity of resources through the introduction of new technologies.

— The use of alternative energy sources instead of energy derived from hydrocarbon fuels.

— Changing the vector of socio-economic development based on its alignment with the laws of nature.

— Formation of a new type of morality and new humanism.

— Transition to the Era of the "New Enlightenment" based on ecological consciousness and thinking.

— Collective actions to protect the environment.

The interdependence of all components of the biosphere determines its normal functioning as an integral system. In this regard, the preservation of natural ecosystems determines the choice of ways of socio-economic development of society. The biosphere as an integral system is in a mobile, dynamic equilibrium with the environment and in the interaction of its components, and at the same time its living matter plays an active role in ensuring an equilibrium state.

In maintaining the integrity of the biosphere in modern conditions, a special role belongs to society, which needs to take into account the established laws of the biosphere in order to maintain a natural balance in it. To maintain such a state, it is important to ensure that by-products and household consumption are disposed within the production process, so that artificially created substitutes for natural resources can enter the biological cycle, and can be also destructed and decomposed with their subsequent disposal and transfer to a neutral state.

The introduction of new chemical compounds into the biosphere changes the nature of the biogeochemical cycle. This creates a new habitat for all living organisms, including humans, which has a significant impact on their vital activity. Today, under the influence of biogeochemical energy, we can observe the changing in natural processes of energy and mass exchange, as well as emerging of new types of anthropogenic energy that have not been encountered in the environment yet. The results of these processes are new diseases that pose a danger to people. Practices related to the breeding of new plant varieties and animal breeds have led to a change in the natural environment in which the living of wild animals becomes impossible, which directly leads to a reduction in biological diversity. In turn, the destruction of biological diversity and the reduction of natural ecosystems lead to a reduction in living environment. All these negative trends led to deterioration in the living conditions of people, to an increase in the genetic burden in the human population and the emergence of new diseases.

Human activity can influence the properties of sustainability and reliability of ecosystems. If it exceeds the criteria for changing the functional integrity of the ecosystem, then the latter is unable to return to its original state. At the same time, the human impact on the biosphere leads to a sharp acceleration of the migration of atoms in comparison with natural biogeochemical processes. This is accompanied by a violation of the established balance in nature and leads to the loss of stability of natural ecosystems. The stability of ecosystems expresses their ability to maintain the established equilibrium or actively restore their essential parameters in case of minor disturbances.

The risk of loss of qualitative characteristics of the human habitat determines the importance of choosing a vector for further socio-economic development. The change in the

vector of socio-economic development is primarily due to the transition from an anthropocentric orientation in relation to man to nature to a bio-anthropocentric one. This orientation is connected with the preservation of biological diversity as the basis for maintaining the stability of the biosphere, with the introduction of environmentally safe technologies, as well as with the economical use of natural resources based on a resource-saving economy.

Maintaining high-quality living conditions of people is possible on the basis of taking into account the restorative and assimilation capabilities of natural ecosystems, therefore industrial enterprises should be built taking into account their properties. This means that in order to achieve a secure future, a number of measures are required. They include limiting the world's population, rational use of resources through the introduction of new technologies, as well as the formation of a new attitude to nature based on a bio-anthropocentric orientation. Thus, the future of humanity depends on the ability of our mind to bridge the gap between the speed of technological progress and cultural evolution. J. von Neumann warned about such a danger, who in the middle of the last century expressed the idea that accelerating progress in technology and in life could lead the familiar human world to destruction.

A similar thought is expressed by A. P. Nazaretyan when he raises the question of whether the Earthly mind will have time to achieve self-control in accordance with the accelerating technological growth before the destructive consequences become irreversible [6, p. 30]. In other words, will humanity be able to develop and implement such technologies that are able to prevent dangers to the development of the biosphere and man? Or is the latter waiting for an imminent finale?

The established type and the current type of technogenic civilization has given a lot of scientific and technical achievements that allowed it to provide a high standard of living, increase average life expectancy, agricultural productivity, the speed of movement, and communications, ensure the quality of medical care, create modern technologies, master nuclear energy, penetrate into outer space and much more. However, the emerging technogenic civilization is characterized by the dominant role of technology, the predominance of a utilitarian approach to life and a decrease in attention to the spiritual sphere of human development. The result of this is a global environmental crisis, which turns the problem of the survival of human civilization into a priority, therefore, such criteria of progress as the creation, accumulation and consumption of material goods should be revised in the direction of human self-improvement. Only under these conditions it is possible to achieve a secure future.

The most important condition for achieving a secure future and preserving the environment is to limit economic growth to a sufficiently acceptable level that does not violate the qualitative parameters of the human environment. There are certain boundaries beyond which it poses a social danger to people. These include the objective limitation of natural resources, the volumes of which are not unlimited. First of all, this concerns non-renewable resources such as ores of many metals, reserves of energy carriers (oil, natural gas, coal), limited land areas, forest territories, etc.

When designing the future, it is necessary to take into account the cyclical and wave-like nature of economic development, which consists of alternating phases of economic growth rates. Periods of growth and recession in the economy determine cycles, the length of which is a period of five-eight years. An example of this is the financial and economic crisis that occurred in 2008, which was repeated in 2016. Based on this, it can be assumed that the onset of the next crisis should be expected in the near future.

Overcoming such dangerous economic trends is associated with the rejection of the market industrial-capitalist model in favor of a humanistic noospheric civilization. If the first is based on the goal of making profit for profit, then the second is based on the use of nature-like technologies and the elimination of speculative capital.

Nature-like technologies can increase the productivity of resources. Their introduction into industrial production makes it possible to prevent industrial pressure on the biosphere, which can play an important role in achieving a secure future. Additive technologies are aimed at selecting innovations that will serve as the basis for industrial development in the coming decades.

The modern model of economic development is based on uncontrolled production and consumption and is focused on making profit and accumulating wealth. This model does not take into account the laws of nature, and its spread as a development strategy for most countries of the world community has become one of the main causes of the global environmental crisis.

An important role in building the future belongs to the value orientation of the human, which are determined by nature. They should help in overcoming the negative phenomena of human activity through understanding the positive achievements of the experience of the past. At the same time, value orientations are the basis for determining the socio-economic development of a country and the entire world community. "Among all the threats that exist in the world, the threat of an ecological crisis and, in the near future, the threat of an ecological catastrophe as a result of the loss of a person's moral attitude to nature, considering the latter as created to meet his needs, is of particular danger" [7, p. 292]. The modern information society has a huge impact on the foundations of human morality and its spiritual world. "The future will depend mainly on how, with the help of new knowledge about Nature and society, new paradigms of existence and the collective will for their implementation will be developed" [8, p. 152]. It should be taken into account when developing a strategy for further development.

In designing systems of the future, it is also necessary to coordinate socio-economic development and the laws of the biosphere. This will ensure the harmonious interaction of the integrity of society and nature. It is this kind of integrity that has existed for a long time, when man was organically included in the structure of the biosphere. The rapid development of science and technology, which led to the transformation of human activity into a huge geological force in the middle of the last century, led to the isolation of people from nature, freed them from their dependence. At first, this circumstance was entirely regarded as a victory over nature. However, the harsh environmental reality has put a limit to the power of human over nature, as it threatens his immediate future.

A possible means of overcoming these negative trends is a philosophical worldview that forms an objective and holistic picture of social reality. One of the most important prospects of the basic, ideological foundations of the development of society should be associated with the return of the ability to realize the meanings and possibilities of human existence as a complex integral system responsible for the development of life in a single complex of the universe. It is this circumstance, as the authors emphasize, that recreates a holistic picture of the world, which serves as the basis for the formation of the worldview of both an individual and society as a whole and opens up the possibility of designing a secure future.

Conclusion

The establishment of new value orientations based on taking into account the requirements of the laws of the biosphere and determining the possibility of the formation of a new civilization becomes an inevitable condition for the preservation of life on Earth. At the same time, the growth of unresolved problems, new challenges and conflicts in the first quarter of the 21st century characterize the current state of the planet as global instability. In these extreme conditions, the points of growth of a new civilization are crystallizing, where the main challenge is clearly a new vision of the role of the natural environment in the life of mankind. This indicates that the future of the planet depends on the choice of directions for the further development of mankind. In the situation of changes that significantly activate the process of selecting a new context in culture, there is a desire for a rapid renewal of basic values without proper historical and social selection that can create an illusion. There is a danger of going down the wrong path and forming a distorted image of the future. The original conservatism of culture and its bearers is largely justified here. Depending on whether the humanity can cope with the existing dangers, its future depends… Preventing challenges and threats to the life of modern society and achieving a secure future requires not only a revision of the model of economic and technological development, but also changes in worldview orientations that will be based on the values of the consistent integrity of society and nature.

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Authors' information:

Pavel A. Vodop'yanov — Corresponding Member of the National Academy of Sciences of Belarus, Dr. Sci. in Philosophy, Professor; pav1940@bk.ru
Alexander N. Danilov — Corresponding Member of the National Academy of Sciences of Belarus, Dr. Sci. in Sociology, Full Professor; a.danilov@tut.by

Закат техногенной цивилизации: стратегия достаточного развития

П. А. Водопьянов[1], *А. Н. Данилов*[2]

[1] Белорусский государственный технологический университет,
Республика Беларусь, 220006, Минск, ул. Свердлова, 13а
[2] Белорусский государственный университет,
Республика Беларусь, 220030, Минск, пр. Независимости, 4

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Первая четверть XXI в. ознаменовалась состоянием глобальной нестабильности в мире. Резкое изменение климатических условий, сокращение биологического разнообразия, экспоненциальный рост численности населения, недостаток природных ресурсов и жизненного пространства, загрязнение окружающей среды образуют комплекс глобальных проблем современности, которые несут угрозу ближайшему будущему человечества. Авторы демонстрируют природоразрушительный характер сложившегося потребительского вектора развития, который лежит в основе современной экономической модели, а также раскрывают негативные аспекты научно-технического прогресса, приведшего к глобальному экологическому кризису. Преодоление данных негативных тенденций предполагает выбор новых стратегий социально-экономического развития, которые основаны на его согласовании с законами эволюции биосферы. Утверждается, что достижение безопасного будущего неразрывно связано с сохранением природных экосистем, с их способностью самовосстанавливать нарушенные процессы в пределах хозяйственной емкости биосферы, поскольку ее превышение приводит к нарушению биологического круговорота энергии и вещества, к нарушению экологического равновесия в биосфере. С учетом раскрытых закономерностей сохранения природных экосистем и биосферы в целом авторы обосновывают стратегию достаточного развития, а также определяют комплекс связанных с ней мер. Реализация данной стратегии определяет целесообразность разработки экологобезопасных технологий и утверждения нового гуманизма как необходимого условия достижения безопасного будущего. Утверждается, что для достижения безопасного будущего необходим радикальный пересмотр ценностных ориентаций во взаимодействии общества и природы, который состоит в смене антропоцентристской ориентации человека по отношению к природе на биоантропоцентристскую ориентацию, которая учитывает необходимость сохранения природы и духовного мира, сохранения нравственных устоев развития общества.

Ключевые слова: природная среда, стратегия достаточного развития, будущее человечества, экологический кризис, новый гуманизм.

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Контактная информация:

Водопьянов Павел Александрович — чл.-корр. НАН Беларуси, д-р филос. наук, проф.; pav1940@bk.ru
Данилов Александр Николаевич — чл.-корр. НАН Беларуси, д-р социол. наук, проф.; a.danilov@tut.by