ATLANTIS PRESS

Advances in Economics, Business and Management Research, volume 105

1st International Scientific and Practical Conference on Digital Economy (ISCDE 2019)

The concept of sustainable environmental and economic development in the transition to the digital economy

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***Abstract* — Introduction. Network economy does not reduce the flow of economic crimes: forgery of facsimile signatures, unauthorized intrusion into state secrets, etc. use the Internet along with law enforcement terrorists. It is safe to say that each positive aspect of the digitalization of society is opposed by the corresponding negative. In most developed countries, a system of measures to minimize the "digital inequality" of property differentiation is being developed to strengthen stability and good governance.**

Research methodology. In our opinion, the analysis of the Genesis of the environmental representations would be incomplete without a reflection of the number of directions of ecological-economic thought, are grouped in accordance with the interpretation of the causes of predatory attitudes towards natural environment and ways of Pro-ecological transformation of the socio-economic systems.

Research result. In the last quarter of the twentieth century, the world scientific community is increasingly turning to the need to rethink views on development, to demonstrate moral wisdom in relation to nature, and to consider the technological sphere only as an important element in solving environmental problems.

Discussion of results. In the digital environment, you need to define clearly oriented further azimuth environmental and economic development, the urgent change process priorities in the field of ecology and management, choose a new paradigm that will be accepted by the majority – the concept of "environmental management" (D.S. Gordeeva, A.A. Salamatov).

Keywords — sustainable development, ecological modernization, digital economy, ecology of management, ecologization of society, socialization of nature.

I. INTRODUCTION

When it comes to the transition to a knowledge-based society, the information society, often overlaps the negative aspects of change, proclaiming only the positive trends of change. Agricultural technologies often led to the transformation of soils into barren deserts, destroyed forests. As for classical industrial technologies, the disruption of the climate balance, the acute shortage of fresh water, pollution of the urban atmosphere, the rapid depletion of natural resources are the most famous negative consequences. Network economy does not reduce the flow of economic crimes: forgery of facsimile signatures, unauthorized intrusion into state secrets, etc. use the Internet along with law enforcement terrorists. It is safe to say that each positive aspect of the digitalization of society is opposed by the corresponding negative. In most developed countries, a system of measures to minimize the "digital inequality" of property differentiation is being developed to strengthen stability and good governance. In order to build a knowledge-based society in Russia that can minimize the negative and catalyze the positive effects of digitalization, it is necessary to radically change the attitude to the development of science and education.

Russia's current environmental difficulties are a direct legacy of economic crises. In terms of the number of technically complex, environmentally hazardous industries, Russia belongs to the developed countries, and in terms of the use of limited resources and waste-free production – to the third world countries. On the one hand, Russia has growing problems of developing countries – degradation of fertile land, disposal of radioactive waste, focus on outdated standards in the automotive industry, etc., and on the other hand-unread environmental activity in solving economic problems can lead to economic collapse [3]. It is also obvious that the development of industry leads to a steady increase in the amount of waste that is harmful to the environment. That is why there is an urgent need to achieve ecological and economic balance in the difficult conditions of increasing digitalization of society.

A thorough analysis of Russian and foreign sources on the issues under study showed that the goals and theoretical and methodological foundations of the concept of ecological and economic development should be developed, on the one hand, with a focus on global trends and transformation of ecological and economic concepts, and on the other hand - in line with the national characteristics of understanding the socio-ecological and economic processes taking place in Russia. People faced the task of a clear multidimensional assessment of the current socio-economic structure, analysis of prevailing

values and its ideals, and bringing them into line with the goals and objectives of social development

The Genesis of environmental concepts in the experience of economic development and management includes stages that are characterized by certain value orientations and worldview principles in relation to human nature in the process of economic activity. The analysis of historical ecological and economic changes will help to overcome the resistance of supporters of some of our cultural and historical traditions, to improve the quality of the environment, taking into account the interests of present and future generations.

II. RESEARCH METHODOLOGY

The methodological basis of the study presented the research results formed the connection methods of compiling and systematizing historically developed ecological-economic orientations with synergistic campaign, revealing common mechanisms of development of different nature systems with invariant General laws, in relation to environmental and economic issues (A.F. Amend, A.Y. Davankov, D.Y. Dvinin I.D. Zverev, N.P. Ryabinina, A.A. Salamatov, I.Z. Tyumaseva, I.T. Suravegina [1-5], etc.).

In our opinion, the analysis of the Genesis of the environmental representations would be incomplete without a reflection of the number of directions of ecological-economic thought, are grouped in accordance with the interpretation of the causes of predatory attitudes towards natural environment and ways of Pro-ecological transformation of the socio-economic systems. Since the following currents existed approximately in one time interval (1960-2000), in many cases the boundaries between them are blurred (I.P. Kulyasov, O.N. Yanitsky[6-8], etc.).

In the pilot study were also used methods of sociological research (G.S. Batygin, I.F. Devyatko, V.A. Yadov), a number of methods of analysis of empirical information (M.V. Jorgensen, P. Kvale, E.Y. Meshcherkina, V.V. Semenova, G.G. Tatarova, J.N. Tolstova, L.V. Phillips, V.A. Yadov, etc.) and methods of sociology of culture (L.G. Ionin, I.I. Kvasova).

III. RESEARCH RESULT

In the last quarter of the twentieth century, the world scientific community is increasingly turning to the need to rethink views on development, to demonstrate moral wisdom in relation to nature, and to consider the technological sphere only as an important element in solving environmental problems.

The term "sustainable development" was proposed more than 40 years ago in the report of the International Commission on environment and development (1984-1987), and although it is still not precisely defined and drawn from the English original source, it is not an accurate translation. Sustainable development in the report refers to development that meets the needs of modern times without compromising the ability of future generations to meet their needs. Analyzing the prospect of post-industrial development of society, we agree with the definition of "sustainable development", given by S.Ya. Kondratiev "sustainable development should be considered, which does not go beyond the capacity of the biosphere, preserving its functions as a self-organized and self-regulating system" [12].

In our view, in order to achieve the sustainable development goals, it is necessary to transform its stated principles into concrete economic, social, technological and pedagogical projects and programmes by means of which the future of human society will not be a series of unpredictable environmental disasters. The solution of the following problems, in our opinion, will bring the system "society – environment" closer to the state of stability and balance.

A. The first problem is biological.

Studies of biologists prove that the mechanisms of constant change of species inherent in the evolution of the animal world ensure the existence of one species on average for about 3,5 million years. Modern man, which appeared as a species about 60 thousand years ago, is actually at the beginning of its life trajectory. However, its active economic activity, without knowing it, reduces the biological time represented by nature. Environmental crises - signals of the biosphere, warning humanity about the reduction of the boundaries of the corridor ecologically unproblematic existence of civilization. There are no effective responses to such signals in any national sustainable development programme or strategy.

B. The second problem is socio-demographic.

The current socio-economic system does not create the conditions for the transition from unsustainable to sustainable development. Poverty is growing, hunger is spreading, the population in developing countries, already overpopulated countries is increasing. Urbanization is gaining momentum, whereas since 1976 the population has increased by an average of 1.7 %, the population of cities has increased by 4% annually. The processes accompanying urbanization lead to a sharp decrease in the resource sustainability of urban areas to the impact of natural and man-made disasters.

Issues of equitable distribution of natural benefits were repeatedly voiced at the world summit in Johannesburg. However, in modern public practice, natural goods, with rare exceptions (air, water of the Oceans), are the subject of private property, providing economic well-being only in those countries in which they are geographically located. Ever since experts developed the idea of introducing quotas of scarce benefits and proposed mechanisms of their redistribution. The idea of a global quota of the so-called ecological space is interesting [10], but such radical ideas are not supported by the top leaders.

C. The third problem of sustainable development is economic and political.

The obvious reluctance of politicians from the leading economically developed countries to conform to modern environmental realities is especially paradoxical against the background of the forced recognition of the market's inability to fundamentally solve fundamental issues at the intersection of economy and ecology. Market failures, or market failures – have become a popular definition of this phenomenon, the rigid centralized management of increasingly limited natural goods. The solution to the current stalemate is a fundamental revision of the content and structure of national programs, especially it is necessary to pay attention to environmental legislation.

D. The fourth problem is information.

The information capacity of mankind has reached such operational power that those deterrents developed at the end of the 20th century, no longer meet the new increasingly complex requirements of intensive development. The specific productivity of technologies increases - the ratio of the volume of the obtained useful product per unit of energy and raw materials costs.

The concept of sustainable development, in our view, focuses on political pragmatism rather than on science-based ideas. By means of global dialogue, it has made it possible to reach a certain consensus of economic and political parties, as it gives an extensive field for research studies of the world scientific community and links economic growth with the preservation of the natural environment.

The ideology of the Western concept of sustainable development in many aspects is close to the national concept of environmental management. The founder of the concept of rational nature management is D.L. Armand, who for the first time in the national scientific literature presented a scientific approach to the use of natural resources as the priority values of mankind. Published in 1964, the work of D.L. Armand with the significant title "Us and our grandchildren" [4], served as a Manifesto of environmental management as an alternative to the prevailing in the public mind the waste, segalotto and disregard for natural values. It was Armand who formulated and economically justified the idea of paying for nature management, which became one of the fundamental in the emerging concept of rational nature management.

Of particular importance in the economic aspect of the concept of environmental management are the scientific works of P.G. Oldak[9]. He understands environmental management as a strategic direction of the state economic policy, accepting and sharing the views of D.L. Armand on the distribution of natural resources between generations as the basic ideology of future development. Academician T. S. Khachaturova and head of the first in Russia Department of environmental Economics at the faculty of Economics of Moscow state University K.G. Hoffman take an active part in the formation of the economic basis of the problems of environmental management. It is worth emphasizing that the concept of rational nature management was not at one time absolutely innovative, it reflected the classical ideas of socialization of nature, which are the scientific heritage of M.V. Lomonosov to V.I. Vernadsky[8].

We outline the main conclusions arising from the national concept of environmental management:

- radical change of anthropocentric views on the relations of society and nature to the paradigm of ecocentrism;
- establishing conditional equity in the distribution of natural resources between present and future generations;
- consumption of renewable natural resources should not lead to environmental degradation;
- purposeful limitation of extraction of non-renewable natural resources;
- minimization of waste and production;
- establishment and further not exceeding the threshold values of concentration of substances polluting the biosphere;
- reduction of environmental risk as a result of industrial and other economic activities of the company;
- compensation for damage to the environment caused by human activity;
- payment for land use, water use, subsoil use, etc.;
- protected the most valuable natural objects in need of conservation and protection;
- state support for the principles and laws of environmental management.

The practical implementation of the presented concepts is possible under the conditions of ecologization of society and at the same time socialization of nature, which is impossible without the support of the education system focused on sustainable development.

In the late 80-ies of the 20th century in Western science traces the background of the theory, which integrated the ideas of ecosociology, econoanarchism, the concept of risk society and the concept of sustainable development, but without their apocalyptic perspectives. Environmental modernization, according to its supporters, is a carefully thought-out tool for achieving sustainable development, answering crucial questions - how to change growth to development and how to achieve the emergence of eco-oriented efficient economy. German economist Joseph Huber is the founder of the ideas of ecological modernization, although on the creation theory worked and continues to work a whole galaxy of economists, environmentalists and sociologists with a world name (A. Mol, A. Veale, G. Spaargen, etc.) [7].

The concept of environmental modernization prevails in the minds of the highest administrative bodies of China, where, from the beginning of XXI in the main goal of state policy is to solve social problems that are caused by intensive economic growth, through the scientific potential of the Chinese Academy of Sciences, integrated with the translation of traditional values of the Chinese people. Professor C. Hae (He Chuanqi) was the author of a theory of secondary modernization (modernization in General, not just ecological modernization), its main provisions were published for the first time in 1998 [14]. After analyzing the writings of Professor H. Hae, we highlight key provisions of characterizing the specifics of the concept of ecological modernization:

1) Ecological modernization is a natural stage in the gradual evolution of ecological concepts, a fundamental historical paradigm;

2) The process of implementation of the concept will be difficult, its victory is questionable and raises many questions;

3) Environmental modernization should be supported by the education system, which is the most important social source of information;

4) International relations must also be ecomobilization, and stream both positive and negative experiences of implementing the concept of ecological modernization mandatory;

5) There is no best model of ecological modernization – in full accordance with T. Saati [15]: "Research is the art of giving poor answers to those practical questions to which even worse answers are given by other methods."

According to the concept of environmental modernization, the integration of environmental and ecological interests is irreversible, mandatory and does not require evidence.

The idea of the concept of sustainable development has an extensive theoretical basis, is generally accepted and understandable for the entire world community, but nevertheless, almost simultaneously, there is another theory - the concept of environmental modernization, which becomes an integral part of the world scientific debate. Significant differences of the dominant ecological concepts, or is it just linguistic invariati.

Table 1 presents a comparative description of the strategies for the implementation of the two prevailing environmental concepts of the late 20th and early 21st centuries.

TABLE I. COMPARISON OF THE CONCEPT OF SUSTAINABLE DEVELOPMENT AND THE CONCEPT OF ENVIRONMENTAL MODERNIZATION

Feature for comparison	**Concept of sustainable development**	**Concept of environmental modernization**
The period of formation of the concept	1984-1987	1980-1990
Founders	The Term "sustainable development" first appeared in the UN report "Our Common Future", which was prepared by the Commission G. H. Brundtland	Murray Bukchin, the founder of modern social ecology, the term first appeared in 1980 in Germany
The semantic load on the definition of the	Term "sustainable development" does not carry environmental issues, in its dynamics make a significant contribution to other areas. The term "sustainable development" is used most often in the context that you define words like prevention, responsibility, progress, the next generation, children, improve, education, interaction, protection, conservation, rehabilitation, recovery, community, collective action, precaution, etc.	The term "ecological modernization" has a direct reference to environmental issues related to public activities. The term "environmental modernization" is associated with another set of words, such as growth, expansion, utilization, resources, economy, management, control, regulation, efficiency, productivity, opportunities, technological, strengthening, etc.
Content direction	1.Stabilization of population; 2.Preservation of the planet's biodiversity; 3.Use of alternative energy sources - river energy, solar energy, etc. 4.Continuous qualitative improvement of technologies; 5.Elimination of social inequality.	Restructuring of the economic system, change of industrial technologies with the help of science and research institutes; combination of high level of economic development and low level of environmental impact.
Variability of positions	1.Very weak sustainable development (economic growth is allowed); 2.Weak sustainable development (transition to rational use and management of resources); 3.Strong sustainable development (integration of material, natural and human capital); 4.Very strong sustainable development (requirements of zero economic growth and zero population growth).	1.Weak ecological modernization model (a means of prevention of risks - technological innovation); 2.Strong model of environmental modernization (transformation of social institutions).
Goal-setting	Solution of global environmental problems paradigm	Shift of economic development
Development prospects	1.A radical change in the values and priorities of humanity; 2.Elimination of existing social contrasts, assistance to developing countries; 3.Interdisciplinary scientific developments that allow to move to management based on natural science analysis	1.The greening management areas; 2.Effective legislative protection of the environment; 3.Greening of public consciousness; 4.The emancipation of nature; 5.Prevention of pollution of production and consumption
Business sphere	Competitive enterprises are only those that do not pollute the environment	Competitive enterprises are only those that use eco-oriented innovative technologies
Policy	Is the basis of management decisions	
	experts; key figures; preference for market control mechanisms	consultation and complicity; preference for foresight and planning

IV. DISCUSSION OF RESULTS

The concept of sustainable development refers to the real possibility of methodological synthesis of the goals of economic, environmental and social development. The concept of environmental modernization is the most technological, progressive and digitalized, the role of the state in it is to create conditions for the maximum reorientation of the economy to solve environmental problems.

How significant are the differences between the two prevailing conventions in society? Both advocate prioritizing environmental goals not at the expense of economic growth. Perhaps the differences are purely linguistic, and we are faced with, in fact, a false choice between "very good" and "very,very good"? How alternative are of ecological ideas?

We list the fundamental differences between the strategies of further ecological and economic development:

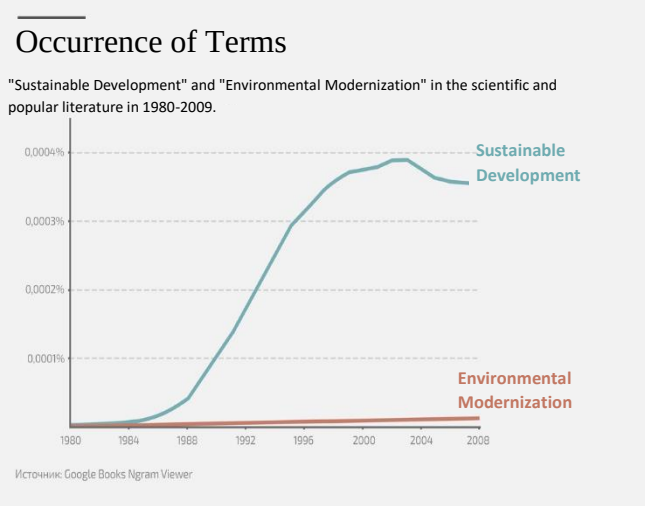
1) The concept of sustainable development with its appeal to future generations and careful (careful) attitude to the environment, especially supporters of strong resistance slopes to reduce man-made impacts to a minimum. While

environmental modernization does not make such high-profile statements, but only seek to improve the technological process through research and development.

2) Global studies goals: the concept of SD is trying to solve global environmental issues: climate change, biodiversity loss, ozone depletion, etc. by continually declaring the widening socio-economic damage, whereas in the strategy of ecological modernization is fundamentally not the objective is a direct response to global environmental problems, they should all be solved as a side-result of the change of paradigm of economic development.

3) The role of the state in solving environmental problems is also different: in the concept of SD, all responsibility for what is happening, as well as the intended measures of prevention and elimination of consequences, is assigned to the state power, while supporters of environmental modernization consider responsible companies and corporations that pollute the environment. The role of the state is either to support organizations whose functioning meets the criteria of reducing the natural resource and energy component and strengthening its resource isolation, or to limit their activities.

Interesting, in our opinion, is the fact of popularity of two concepts in scientific and popular literature.



Both concepts appeared around the same time, but a thorough analysis of the scientific literature says about the extreme popularity mentions of sustainable development, while ecological modernization is popular among a narrow circle of the authors (O.V. Aksenova, W. Beck, G.A. Kudinova, G.S. Rozenberg, O.N. Yanitsky, etc. [15-20])

Many aspects of the SD concept, not being implemented, are already outdated, while environmental modernization is gaining popularity, and for many European countries it is the only vector of the possibility of further existence.

Compliance with strict environmental requirements is not currently an obstacle to economic development. This is an effective mechanism that stimulates progressive structural transformations that are ahead of the development of high-tech and resource-saving industries and industries in the modern world that determine the status and competitiveness of the national economy. Unfortunately, the postulates of the concept of SD, as, of course, fundamental and indisputable, stay comfortable passive dogma, concept of ecological modernization are implemented dynamically, but for a number of reasons, not everywhere.

In the digital environment, you need to define clearly oriented further azimuth environmental and economic development, the urgent change process priorities in the field of ecology and management, choose a new paradigm that will be accepted by the majority – the concept of "environmental management" (D.S. Gordeeva, A.A. Salamatov). Ecology of management - innovative research direction, including a complex system of educational, financial,economic and high-tech forms of management in a liberal economy, which implements the functions of organization, controlling, motivation and coordination of production activities, focusing on the requirements of environmental safety and providing a minimum program in the field of environmental problems, aimed at:

1) Individualization of morals and ecological and economic responsibility of a specialist decision-makers within the local social economic system, perception itself, limiting the subject, without taking into account the views of which, the organization will not come to a unified and effective environmental-oriented economic decision;

2) According to the effective chain to improve the functioning of the organizational ecosystem, the existing one is integrated.

It is necessary to develop relations between organizations (human potential) and the environment (resource potential), taking into account the experience of historically developed management concepts, perceiving difficulties and mistakes as a kind of relativism, without which it is impossible to achieve absolute success. Ecology of management is a qualitatively new, but natural stage in the development of management thought, focused on the principle of creating equal opportunities for the development of socio-economic (organization) and natural systems. The study of the behavior of organizations using integrated ecological-economic approaches, development of indicators system for regulating the value of external pressures (threats) under the terms of tolerance of environmental-economic systems, the construction of adequate economic-mathematical model of strategic responses of organizations to environmental and economic threats to the safe operation and construction of model of the graduate-Manager, ready to implement the declared and the actual goals of administrative activity, of course, give tselenapravlenno and concrete research in the designated subject area. The concept of "ecology of management" has its own theoretical and methodological basis and is fully consistent with the innovation of the digital economy.

V. SUMMARY

The concept of "digital economy" is still popular among the research and development of modern times. It emphasizes that the decisive component of all high-tech and knowledge-intensive products will be information technology, modern

systems that involve different proportions of their combinations. It remains to answer a few questions. What is necessary for the modern "digitalized" society for the production of knowledge to the extent that is able to meet the most important needs of mankind? Is there any hope that it will be able to provide this production? Finally, is modern humanity able to minimize the damage that inevitably occurs when rapidly accumulating knowledge is used to harm, as well as to avoid the next utopias about the continuous benefits associated with the sustainable development of a knowledge-based society? Answers to these questions will help to get a qualitatively new research direction – the concept of "ecology management".

Acknowledgement

The reported study was funded by RFBR, project number 19-29-07209

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