

## **SUSTAINABLE DEVELOPMENT: INNOVATIVE SYSTEMS APPROACH OF ENVIRONMENTAL SAFETY OF ENTERPRISES OF DEVELOPING COUNTRIES**

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*The article is devoted to questions of the innovative system approach in ensuring environmental safety of enterprises of developing countries. The essence, classification and innovations of the position of sustainable development are specified. The experience of the foreign companies of the developed countries concerning ecological sustainable development is reviewed. The priorities and directions of the main activity on the innovative approach from the standpoint of sustainable development for developing countries are presented.*

**Key words:** Sustainable Development, innovative system approach, environmental safety, environmental sustainable development

Introduction. Sustainable development strategy is one of the key and priority in all industries, economics and economy. Its principles and main provisions are aimed at achieving harmony between the growth of economic indicators, social stability and environmental protection. Preserving natural resources, maintaining their sustainability and shifting to resource-saving, energy-efficient technologies are perhaps one of the key tasks on the in order for Ukraine. According to the World Bank, Ukraine has only scored 37 points on energy efficiency indicators in terms of energy policy and standards. For comparison, Austria, which has long prioritized the "green" policy, scored 73 points in the same rating. Our closest neighbors also showed high results: Romania (87), Czech Republic (86), Belarus (62), Poland (57). Ranking leaders ranked Denmark (94), Canada (91), USA (91) and the Netherlands (90) [1].

The deterioration of the global environmental environment, the need to attract the world community's attention to environmental problems and the growing need for urgent action have led to the launch of the key criteria for sustainable development at the UN Conference on Environmental Challenges and Development in 1992 (Rio de Janeiro). This conference is known as the "Earth Summit" as it was attended by leaders from 178 countries of the world, representatives from 1,600 non-governmental organizations[2]. These criteria are redefined at the World Summit on Sustainable Development in Johannesburg in 2002 (the plan for the implementation of sustainable development is specified) and set forth at the Rio + 20 conference in 2012. The conference was devoted to the implementation of the concept of sustainable ecologically safe development, which would become an alternative to the consumer attitude of society to nature.

Recognizing the need for humanity to move along a path that combines economic, social and environmental interests, the United Nations has identified sustainable development as the main direction of the development of the entire society in the 21st century [3, p. 84].

The significance of innovation on the formation of sustainable development confirms the worldwide statistics. Countries with high levels of innovation activity occupy a leading position in the global ranking of sustainable development indicators. The results of the analysis of the annual report of the American research company Strategy & "Global Innovation 1000" in 2018 indicate that the global R&D spending increased by 11.4% and reached a record level of \$ 782 billion, reflecting an increase in costs to R&D in all regions and in almost all industries. Highlighting high-performance innovators, it was found that 88 companies belonging to such a group in 2017 had an increase of 2.6 times that of other companies in the Global Innovation 1000 rating from 2012 to 2017 and the growth of market capitalization in 2.9 times. However, the intensity of R & D spending was lower than their industry median. An example of such companies is Apple, Stanley Black & Decker, Adidas and others [4].

Analysis of recent research and publications. The issue of sustainable development is the subject of research of many domestic and foreign scientists, including V. Potapenko [5] A. Chukhno [6]. The research of innovation development and innovations deals with the scientific work of such prominent scholars as G. Volobuev [7], S. Muriithi [8], ND. Du.Preez, L. Louw, H. Essmann [9], L. Fedulova [10]. Research on the role and place of innovation in the formation of ecological sustainable development is reflected in the research papers of E. Bessonova [11], L. Golovko [12], V. Zyanko [13], O. Kozakova [14], N. Meshko [15], N. Sapa [16], A. Tatarinova [3], I. Fedoseeva [14].

The problem associated with forming an innovative system approach for sustainable development requires further theoretical and practical efforts. The systematization of knowledge and the priorities factors, its organization in order to achieve coordinated actions to trigger the sustainable development processes is still a missing piece, probably, is the most important one. In the process of the globalization of economical system the innovation aspect of economical development is becoming very important.

Forming the purposes of article (problem). The purpose of the article is to study the impact of the introduction of an innovative system approach to ensuring the environmental safety of enterprises in developing countries.

To achieve the goal you need to accomplish the following tasks:

- to clarify the essence, classification and function of innovation;
- to determine the role and influence of an innovative system approach in the process in the environmental security of enterprises in developing countries.

Research results. Based on the materials of the United Nations Conference on Environment and Development (1992), sustainable development is a development of society that meets the needs of the present, without compromising the ability of future generations to meet their own needs [17]. Sustainable development consists of three components: economic, environmental and social [11, p. 23]. Governments of all countries, on the basis of the main task - ensuring the rational use and consumption of material resources, must synchronize measures to reduce demand for resource and energy-consuming technologies, reduce harmful industrial emissions into the atmosphere, reduce the release of goods that harm people's health, etc. Instead, they should encourage the production of innovative products and technologies. 'To make economic development a constant process, inspiration for work and innovation must be complemented by appropriate equipment' [5, c.98].

The Inclusive Development Index, published in Davos, 2018, which is an expanded assessment of the country's economic development, identifies two sectors: developed countries (30 countries) and developing countries (79 countries), including Ukraine [18]. The introduction of an innovative system approach to ensuring the environmental safety of enterprises in developing countries is possible under conditions of fundamental changes in the directions of development, introduction of new conceptual approaches to the substantiation of strategic priorities, significant modernization of methods and forms of use of resources at all levels of the innovation system, radical transformation of the interaction of science – business – power – society [15, p. 5; 19, p. 191]. Innovative development is possible only on the basis of a combination of the interests of power and business, because the state can allocate money, the state can organize the scientific community, predict development, help to build priorities, but the development of money, entering the market – it's a business. Therefore, private-government partnership should be focused on the development of scientific technology [16, p. 178].

The dominant role in the process of formation of sustainable development is played by innovations, which ensure the introduction of the latest products of intellectual labor. For the first time, the concept of "innovation" as an exceptionally important economic category was used by Austrian economist J. Schumpeter in his work "Business cycles" (1939). As "innovation" J. Schumpeter suggested understand new scientific and organizational combination of production factors created entrepreneurial spirit. In literal translation, "innovation" by J. Schumpeter is "the embodiment of a scientific discovery, a technical invention in a new technology or a new type of product" [6].

According to the results of the study on the interpretation of the essence of the concept of "innovation" found that scientists are considering innovation from different approaches:

- as a process (innovation is a certain set of actions that promotes the emergence of a new idea on the market);

- as a system (innovation is considered covering all stages - from creating an idea to obtaining results from its activities);
- as a result (a certain result of intellectual activity, expressed in the form of a new or improved product) [7; 8; 9].

Depending on the type of innovation and its focus, socio-economic and environmental changes are being made at enterprises, in the regions and in society as a whole. The key group in innovation from the standpoint of sustainable development is technological innovation, which is represented by innovations in goods and services (innovation-product) or in technology (innovation-process). They are at the basis of satisfying the growing needs of society, increasing the efficiency of production, changing models and generations of technology and technological methods of production [10; 14, p. 127-128].

The impact of innovations on the process of formation of sustainable development can be determined based on the functions they perform, as shown in Figure 1.

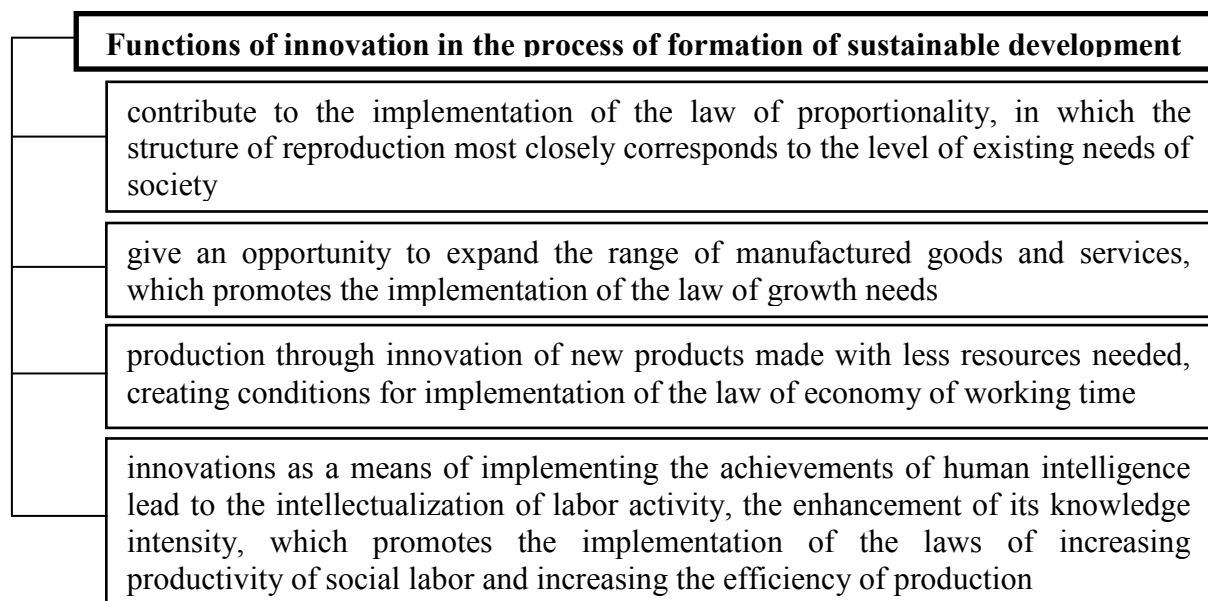


Fig. 1. Functions of innovation in the process of formation of sustainable development [14, p. 127]

The developed projects that provide a reduction in harmful to the atmosphere and is energy saving in the languages of sustainable development, according to V. Zyanko should be checked for innovation, based on the following basic requirements to them:

- innovations should not be detrimental to health;
- innovations should contribute to reducing pollution of the environment;
- innovations should ensure economical use of material resources[13].

Sustainable development leads to the possibility of doing business in the future, hence, it is an integral part of the company's strategy (table 1).

*Table 1*

The experience of foreign companies in developed countries in using an innovative systematic approach to sustainable environmental development [20; 21; 22]

Company	Experience in using an innovative systematic approach to sustainable environmental development
Bayer	in implementing the sustainable development program, emphasizes that the company's innovative resources allow us to implement a strategy of sustainable, profitable growth and increase the value of our company. Innovations and products represent the basis of the company's activity, thus contributing to the expansion of growth opportunities, applying the principles of sustainable development in business, economic growth, improvement of the ecological situation and social conditions. That is, the use of the most innovative resources contributes to the sustainable development of enterprises
Samsung Electronics	Samsung Electronics also demonstrates the desire to save the Earth and its nature. The basics of eco-management, as a philosophy of the XXI century, Samsung Electronics has laid out in the Environmental Declaration of Samsung in 1992. Since then, the company resorts to passive compliance with laws and environmental safety requirements. An eco-management system has already been introduced, through which consumers are offered environmental solutions and open the road to environmentally sustainable development. Samsung Electronics has clearly defined the goals that it intends to achieve in the field of eco-management, namely: reduction of greenhouse gas emissions, production of environmental products with minimal impact on the environment, reuse of waste materials and creation of a closed-loop economy
Nestlé	Another example of sustainable environmental development at the enterprise with the use of an innovative system approach is the company Nestlé. The Nestlé Life Cycle Principle for Sustainable Environmental Development is to: reduce the environmental impact of packaging; assistance in the recovery and recycling of waste, using recycled materials where possible; providing scientifically sound, meaningful and proven information on the environmental friendliness of products and activities of the company

The experience of foreign companies in developed countries in using an innovative systematic approach to sustainable environmental development is very valuable for Ukrainian enterprises.. That is why the National Report " Sustainable Development Goals: Ukraine" (2017) provides key recommendations for reaching the 17 goals set[23]. Figure 2 gives recommendations for achieving Goal 9 “Industry, innovation and infrastructure”.

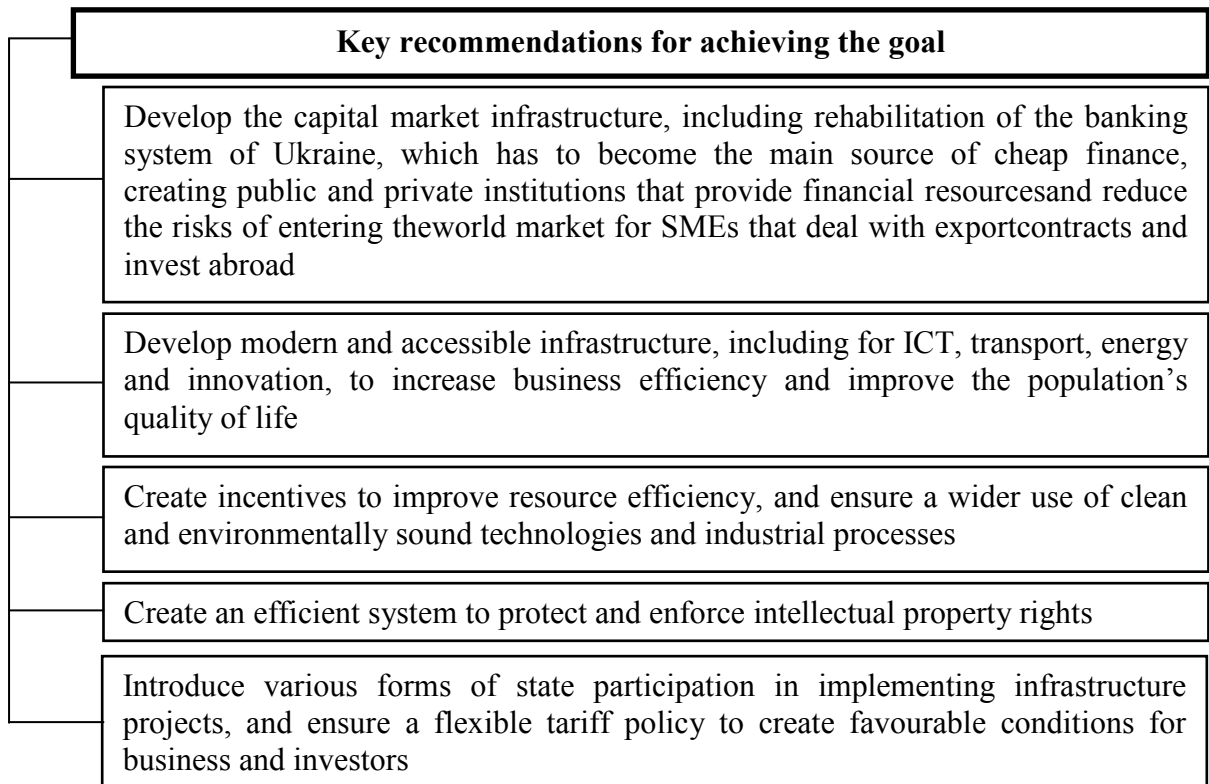


Fig. 2. Recommendations for the attainment of Goal 9 "Industry, innovation and infrastructure" in the process of formation of sustainable development in Ukraine [23, p. 73]

To effectively implement targeted development, they should work closely with the Millennium Development Goals, including such criteria, as poverty, gender, education, health, and means of implementation (fig. 3).

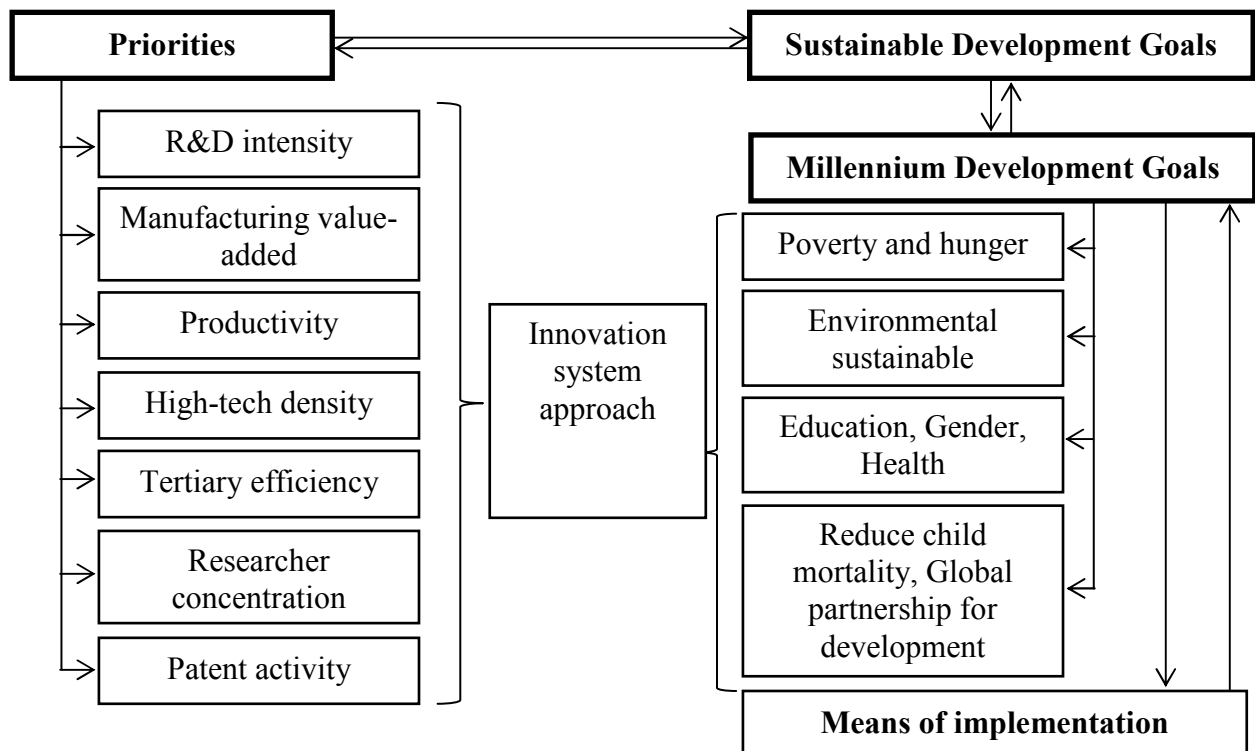


Fig. 3. Priorities and Basic activity by Innovation system approach for Sustainability for developing countries [12, p. 14; 24]

The choice of the ways of the innovation systems development in Ukraine needs the researches in the domestic practice of the systemic economical transformations, detailed study of the way of world development, generalization of the world experience in the adaptation in the industrially developed countries to the reality of the modern world market. The main hypothesis of the structural transformations theory is the development is followed by the growth and different changes that are equal to all countries. But there are some differences between the countries in the speed and forms of the development connected with several specific factors: the natural resources, the area of the country, the aims, the ways of the governmental politics, access to the foreign investments and technologies, the external condition of the country [12, p. 14].

Conclusions. Environmental safety of the country is one of the priority principles of sustainable development of all countries of the world, which envisages the introduction of such a model of development, which meets the vital needs of present generations without depriving such a possibility of future generations. The world economic community faces the challenge of understanding the need for sustainable development, its support and decisive action to make this process as perfect as possible and acceptable to the future. World experience has shown that social progress largely depends on maintaining a balance between the goals of supporting economic growth, business competitiveness, ensuring environmental safety and reducing social inequality.

Rational use of natural resources is almost impossible only subject to compliance by the business entities with the requirements of legislation and other normative documents (standards, limits) in the field of environmental protection. Ensuring the rational use and consumption of material resources due, first of all, to the use of innovations. Innovation is an essential element for maintaining sustainability as well as economic development. Through the use of innovation in the process of formation of sustainable development, it becomes possible to implement the laws of proportionality, the growth of needs, the saving of working time, the growth of productivity of social labor and increase the efficiency of production.

The participants in the an innovative systematic approach to sustainable environmental development in developing countries are definitely interested in developing and using the latest technologies and strengthening the country's innovative potential, which is the only one capable of ensuring the high competitiveness of industry, the development of social and economic spheres, education and science, and this is precisely to ensure further development of the innovation process and strengthening of the country's innovative potential.

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