

The Organization of Biosphere Compatibility Construction : Justification of the Predictors of Building Development and the Implementation Prospects

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Abstract

Taking into account the global trends allows us to assert that during the next decades, and especially during the first half of the XXI century, there will be a significant increase in the volumes of materials and energy sources involved in the production process.

The main components of sustainable development of society are defined: economic, ecological and social. It is proved that the economic system is an integral part of the complex sustainable development of the territory, to achieve which all its fields should be balanced.

It has been established that in order to achieve and maintain a high quality of life of the population and the quality of the environment, it is necessary to adhere to certain basic principles in the economic and technological spheres.

Keywords: energy saving, resource-saving technology, sustainable development

1. Introduction

The scientific substantiation of the need for effective management of local development and investment attraction, the introduction of innovations, measures and plans for energy conservation, the search for effective financial sources and tools for implementing strategies for sustainable urban development are important and relevant at the present time, on the eve of the need for fundamental and urgent reforms in all branches of the national economy [5].

The conceptual foundations for sustainable development of Ukraine and the national program for the development of small towns in Ukraine have been developed by a team of scientists, including B. Danylyshyn, A. Stepanenko, O. Ralchuk, S. Voloshin [6]. In the works of B. Burkinsky [18] some aspects of the problems of sustainable development of the regions have been solved, as well as the problems of the development of the "green economy" in Ukraine are being actively studied. The justification of the strategy and tactics of the sustainable development of the regions of Ukraine in the European context has been carried out recently under the leadership of L. Rudenko. In the scientific work of V. Potapenko [22] the priorities of state policy formation are determined on the basis of the introduction of innovative, more environmentally friendly technologies that will ensure the sustainable development of society in the strategic perspective.

World Bank experts note the following factors of environmental change, which are associated with economic resource consumption [2] p. 52]:

- indicators of the world's population;
- consumption of resources per capita;
- technologies used to produce and consume these resources.

At one time, the author of the theory of ethnogenesis, the famous historian and ethnographer L. Gumilev in his work noted: "a purely consumer attitude to nature really existed always and should not think that such an attitude to nature is unique to the modern representatives of the so-called civilized world. And in earlier times among other peoples traced the same consumer attitude to nature, with the same pitiful consequences" [9, p. 201]. Therefore, there was an urgent need to address the conservation of the environment as the main organizing principle of the functioning of civilization [28, p. 61], and "the economic paradigm should soon be eco-friendly, and a policy that will be able to preserve the natural foundations of our world in the broadest sense rather than the one that contributes to the maximum quantitative economic growth to encourage the satisfaction of any, especially the most absurd, needs ... [7, p. 24]. The direction of solving these issues is the concept of sustainable development, which drew the attention of the world community and scholars of different fields to the concept of "sustainable development" and encouraged research.

In the general sense, under constant development is understood as "development, which allows for a long-term basis to provide stable economic growth, which does not lead to degradation changes in nature" [22, p. 22], and "the goal of sustainable development - is to ensure a high quality of life at the expense of balanced socio-economic development of society, the rational use of natural resources, the reproduction of the environment" [12, p. 3]. Since the trends in economics, ecology and sociology are reliably predicted only for the short-term and medium-term perspective, the identification of regularities in the field of sustainable development, defined in 1992 [25], is a new global ideology of human development. According to I. Didukh, "the first variants of this concept in Ukraine were based on the old principles, and environmentalists, economists, technologists continue to speak" in different languages "and

remain deaf to one another" [12, p. 3]. Therefore, for state planning of sustainable development, the methodology of the systematic spatial analysis of environmental risks in the future, as well as solid scientific research on this issue in all spheres of the functioning of society are important.

Main body. The main task of the state is to create the right conditions for the formation and implementation of a policy of protecting national interests in the field of energy at all levels of the country's social and economic system. In [14], it is noted that the guarantee of energy security of a given country is possible only if the energy system is attained and maintained in a state capable of providing the energy and resources of the economy and the social sphere in a technically reliable, stable, economically efficient and environmentally acceptable manner in spite of the available and the expected impact of negative internal and external factors.

The ecological and socio-economic approach to social production, in general, and the use of nature in particular, was initiated by academician Y. Tunitsa in the 1970s of the twentieth century. [29]. The scientist argues that "only the natural environment in its broadest sense (the resource and non-resource parts) allows you to carry out the process of human labor and through this process to create capital. In its turn, capital reproduces labor and must reproduce the natural environment" [29, p. 26]. Y. Tunitsa considers the ecological component as a necessary condition for the existence of contemporary and future generations; the social component provides a decent life for all strata of the population, and the economic component is a means for solving social problems and creating conditions for the effective use and reproduction of natural resources and conditions of the natural environment.

The main components of sustainable development of society are [26]: economic, environmental and social. Accordingly, in the global sense these components define [15]:

- the economic component is the optimal use of scarce resources and the use of energy and resource-saving technologies to create a cumulative income stream that would at least ensure the conservation of aggregate capital (physical, natural or human), by which this aggregate income is created;
- the environmental component focuses on ensuring the integrity of natural systems, their viability, which depends on the global stability of the entire biosphere. Of particular significance is the ability of such systems to self-healing and adaptation instead of preserving in a certain static state or degradation and loss of biodiversity;
- the social component is focused on human development, maintaining the stability of social and cultural systems, reducing the number of conflicts in society. Man becomes not an object, but a subject of development. The social component must participate in the processes of human life formation, the adoption and implementation of decisions, and the control over their implementation.

At the same time, the social effect in the broad, broad sense is a socially beneficial result that is achieved as a result of the activities of citizens, business entities, organizations, states, aimed at solving existing social problems in society, helping socially vulnerable segments of society or socio-economic development the state and is achieved through the investment of tangible or intangible assets in objects of the social sphere, or objects that do not belong to the social sphere, but contribute to the implementation of priori the aforementioned directions of the social policy of the state, is estimated through the commodity-money equivalent or may not be subject to determination (evaluation) due to the complexity and duration of achievement in time [16]. M. Zgurovsky [15], explaining the three-way concept of sustainable ecological, social and economic development, notes that the implementation of the concept of sustainable development does not guarantee rapid growth of people's well-being, but will require intensive work and consolidated efforts of poli-

ticians, managers, scientists and the entire progressive population of Ukraine.

In the work of S. Doroguntsov and O. Ralchuk [13], who, on the basis of certain considerations, consider that "sustainable (supported) development can be understood as a process of controlled evolution - interdependent changes of mankind (culture) and biosphere (nature)". And security is the only, meaningful, synthetic "own" dimension of sustainable development. In strategic terms, this gives an understanding of the fact that any other externally adorable ways of human activity or do not give the expected results, or even lead to directly opposite effects. And ontological means security means, figuratively speaking, the appropriate distance between humanity (culture) and nature, which ensures their interaction (civilizational dialogue), the possibility of their long, virtually infinite evolution. Emphasizing that this is a constructive process, both in the sense of creating ("constructing") a new future, and in understanding the construction of a sustainable model of sustainable development [13].

In the project of the Scientific Foundations of the National Strategy for Sustainable Development of Ukraine [17, p. 5] states that the modern paradigm of sustainable development is conditioned by the combination of two equally important components in it - the "green" and "blue" economies. "If the first one is connected with the problematic issues of ecologization of economic activity in the sectoral section, then the second concerns mainly the territorial problems of sustainable development, covering regional and local spatial levels."

The algorithm for implementation of the principles of a green economy into the real sector is proposed in the Ten Conditions of the Transition to the Green Economy, developed by the target group of the International Chamber of Commerce on Green Economics, which combine social, environmental and economic innovations [10]. In general, the Green Economy Initiative, implemented by UNEP, seeks to help governments shape and focus policies and processes for investing in "green" development sectors, including "clean" technologies, renewable energy, water supply, transport, waste management, "green" construction, organic agriculture [4].

The main principles of the "green economy" are [22, p.39]:

- equality and justice within one generation and between generations;
- compliance with the principles of sustainable development;
- caution regarding the social consequences and environmental impact;
- understanding of the high value of natural and social capital;
- resource efficiency, sustainable consumption and production;
- the need to match macroeconomic goals in creating green jobs, increasing competition and growth in key industries.

One hundred years ago, the global resource crisis was not on the agenda, and the "green economy" as a recipe for the exit from the systemic recession was not discussed. At that time V. Vernadsky wrote: "The quantity of natural resources that are at the disposal of mankind is always limited. If the course of history has given them a lot to one people, and he will deprive them of a vague, this will suffer all humanity. And he can keep them from the world exchange and use until he is strong enough for this ... The main task of state policy is to master the forces of nature for all mankind, the organization of all mankind. The search for new forces of nature, the use of new forms of energy becomes the next task of the day. This may be a matter of not many centuries, but a few decades, and maybe years" [8].

In the scientific literature, "blue" defines an economy based on reducing energy costs and ensuring diversity through innovations that are implemented by entrepreneurs who are able to take into account the principles of sustainable development and take on appropriate business risks, ranging from deficits to surpluses [20, p. 52]. G. Pauli proposes, based on the laws of nature, to build such production that does not produce waste,

but produces substances that cascade can be used by ecosystems or other producers. And in nature, waste that appears as a result of a process is always a useful substance, material, or energy source for other living creatures [20, p. 8]. In this sense, the "blue" economy serves as a basis for a combination of a creative partnership between business, government and the public on the implementation of advanced innovations that can protect natural systems, provide favorable conditions for life and increase the spiritual and cultural level of the people [11, p. 52].

In the framework of solving ecological, socio-economic problems of using biofuels and renewable energy, Directive 2009/28 / EU of 23 April 2009 on stimulating the use of energy from renewable sources was adopted [1]. Where it is stated that after 2017, only ethanol made from sugar cane, biogas from household waste, biomass from liquid and dry manure, wheat straw ethanol and ethanol and ethanol will meet requirements for reducing greenhouse gas emissions by at least 60% diesel waste from wood.

Within the framework of the second period of the Kyoto Protocol [24] (2013-2020), Ukraine committed itself to reduce its greenhouse gas emissions by 20% (from 1990 levels) and proclaimed its long-term goal by 2050 - emission reductions of 50 % compared to 1990. Achieving these results requires significant efforts from Ukraine to reform its economy, the main areas of which should be energy efficiency and increase the share of renewable and non-traditional energy sources [27, p.3].

The main reasons for the development of renewable energy in Ukraine include [22, p.215]:

- increase in prices for imported energy, including natural gas;
- availability of natural potential of renewable resources;
- favorable legislative framework in force in the country;
- influence of general world tendencies on development of "green" energy business;
- investments in the national economy.

According to the State Energy Efficiency and Energy Conservation Agency of Ukraine, the total annual technically feasible renewable energy potential of Ukraine's renewable energy in terms of conventional fuel is approximately 98 million tonnes [19], which is almost 50% of the total energy consumption in Ukraine at present and is projected to 30 % of energy consumption in 2030.

The Tax Code of Ukraine [21] stipulates that renewable energy sources are sources of wind, solar, geothermal energy, waves and tidal energy, hydropower, biomass energy, gas from organic waste, gas from sewage treatment plants, biogas. Accordingly, the following transactions are exempted from VAT on the value added tax on import into the customs territory of Ukraine:

- equipment that operates on renewable energy sources, energy saving equipment and materials, means for measuring, controlling and managing the consumption of fuel and energy resources, equipment and materials for the production of alternative fuels or for the production of energy from renewable sources of energy;
- materials, equipment, components used for production:
 - o equipment that works on renewable energy sources;
 - o materials, raw materials, equipment and components that will be used in the production of alternative fuels or the production of energy from renewable sources of energy;
 - o energy-saving equipment and materials, products whose operation ensures the economy and rational use of fuel and energy resources;
 - o Means of measuring, controlling and managing the expenditure of fuel and energy resources.

Regarding renewable energy sources, [23] defines the legal, social, economic, environmental and organizational principles of production (extraction) and the use of alternative fuels, as well as encouraging an increase in their share of use up to 20 percent of the total fuel consumption in Ukraine by 2020 .

However, alternative fuels are defined as solid, liquid and gaseous fuels, which is an alternative to the traditional fuels that are produced (extracted) from non-traditional sources and types of energy raw materials

Accordingly, wind energy projects, solar and small hydropower projects have been launched and successfully completed in Ukraine. Among the economic advantages of wind energy are primarily the fuel economy. And the annual technically achievable energy potential of solar energy in Ukraine is equivalent to 6 million tons of conventional fuel, and its use can save about 5 billion cubic meters of natural gas [22, pp. 216-229]. At the same time, Ukraine's economy has the capacity to produce the necessary components and create the infrastructure of such energy.

Another well-known and promising area of renewable energy development is the use of biomass. Solar energy from photosynthesis is accumulated in biomass of plants used as food-stuffs, animal feeds, technological raw materials, building materials or fuel. Harvesting, processing and consumption of primary biomass are accompanied by the formation of secondary material flows: forest waste, sludge residues, industrial and household waste, manure and sewage.

Biomass – by-products and waste products of biological origin that can be used for energy production - straw and stems of agricultural crops, wood wastes, solid household waste, biogas that can be obtained from manure and litter, sewage sludge dumping from landfills. From an economic point of view, biomass energy production is very promising.

In Ukraine, the process of building boiler houses and the use of biomass as a fuel is very slow, while the EU countries are using this cheap energy at a rapid pace. Thus, in Finland 20% of the total energy is provided through waste and by-products of forestry, in Austria - 10%, in Sweden - 25% [22, p. 230].

At present, the potential of non-traditional and renewable energy sources in Ukraine is not used sufficiently. By the year 2016, the share of non-traditional and renewable energy sources in the energy balance of the country is 7.2% (6.4% - off-balance sources of energy, 0.8% - renewable energy sources).

The problems of expanded use of renewable energy sources concern not only the global community, which cares for climate change of the planet, but also directly to end users - the population. Therefore, regional and local authorities and local communities must actively join in the search for alternative means of energy production. Implementation of renewable energy sources will contribute to solving many problems in the region, in particular environmental protection from technogenic impacts, reduction of dependence on natural gas, solving of social problems connected with energy supply of the population, etc.

Among the issues whose solution can yield significant positive results at the regional level, it can be considered [27, p. 42-43]:

- transfer of boiler-houses serving social facilities to the use of renewable energy sources and alternative fuels (chips, pellets, agricultural waste, solid household waste, etc.);
- use of waste heat potential of technogenic origin (ventilation and cooling water, technological and energy equipment of enterprises, industrial waste water, heat of exhaust gases of heating boilers, etc.);
- application of heat pumps in the processing of low-potential heat, in particular, the heat of sewage, heat of soil and reservoirs into heat energy, suitable for heating and hot water supply of buildings of different purposes;
- use of solar energy for heating and hot water supply of objects of the budget sphere, production facilities and the private sector;
- use of other local energy sources, in particular, the heat of drilled wells, geothermal sources, mine water, coal mine methane, etc.

Each region has its own advantages over the implementation of a different type of alternative energy, due to the climatic features, the level of industrial development and the urbanization of the region. With the appropriate attitude of regional authorities and funding, they can greatly contribute to ensuring energy independence of the region and environmental protection [27, p.43].

Thus, the concept of sustainable development raised the question of the prospects and expediency of development on the basis of a combination of three components: economic, social and environmental, then the main difference between the "green economy" from previous economic theories is the inclusion in the market process of "natural capital" and the attitude towards it as parts of the economy that have the ability to self-reprocess [22, p. 282]. At the same time, experts determine that along with the success of the implementation of the policy of sustainable development there are a number of problems associated with the slow pace of progress, the lack of progressive changes due to the inability to use in practice the principles of sustainable development, low degree of coordination, consistency and coherence of action as separate individuals, and society as a whole [3].

The concept of sustainable development allows a new look at the very concept of cost-effectiveness. Long-term economic projects, in the implementation of which are taken into account natural laws, in the end are cost-effective, but implemented without long-term environmental consequences - loss-making. Although Ukraine is one of the richest natural resources in the world, its use in the national economy is highly irrational. First, the resource intensive domestic gross product remains very high, which is three times higher than the average level inherent in the countries of the European Union. Secondly, the degree of processing of mineral raw materials remains low. Thirdly, the volume of exports of raw materials and products from it [22, p. 285].

2 Conclusion

The economic system is a component of a complex sustainable development of the territory, to achieve which all of its areas should be balanced. To create economic preconditions for harmonious development of a person, achievement and maintenance of high quality of life of the population and the quality of the environment will be possible only subject to certain basic principles (directions of activity and tasks). The following are essential in the economic and technological spheres:

1. All plans and development programs should be subordinated to the achievement of a balanced economic system with social and environmental constituents of sustainable development, and not an end in itself.
2. No project of accommodation, development and liquidation of material production objects, as well as in general territorial infrastructure, can not be carried out without territorial assessment of the technogenic impact on the environment and without taking into account the ecological capacity of the territory.
3. Effective economic principles for solving environmental problems in all sectors of production and services should be formed on the basis of the introduction and development of cleaner production.
4. All projects in the economic sphere should be implemented after conducting an environmental expert examination, which must take into account all factors of sustainable development, and discuss and agree with the interested parties.
5. The criterion of economic expediency and environmental permissibility of the application of industrial technologies is minimization of the used resources and generated waste.
6. Long-term forecasts and planning in the economy should be carried out in stages, adequately to the existing paradigm of development, as well as fundamental changes in the resource and raw material base, the transition to new types of energy

consumption, the principles of sustainable development do not change.

7. The prevailing rates of economic growth, in comparison with the rates of consumption of primary energy resources, should be provided both at the expense of technical (technological) and structural energy saving.

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