Optimizing synergies: effective strategies for integrating economic and environmental interests in sustainable development

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Abstract. As the global economy expands, the tension between economic growth and environmental sustainability intensifies. Traditional ecological-economic systems often struggle to balance these competing interests, leading to conflicts that undermine both environmental quality and economic stability. This study aims to explore effective strategies for harmonizing economic and environmental interests within sustainable development frameworks. We seek to identify and address the inherent contradictions in current ecological-economic systems and propose integrative approaches to mitigate these conflicts. We conducted a theoretical analysis of ecological and economic relations, examining case studies and existing literature to identify key areas of conflict and synergy. Conceptual frameworks were developed to illustrate the causal relationships between economic activities and environmental impacts, with a focus on global pollution trends and their implications for sustainable development. The analysis reveals that conflicts between economic and environmental interests are primarily due to the inadequacies in current ecological-economic systems. The study identifies several critical areas where better integration can enhance system stability, including improved resource management practices, enhanced regulatory frameworks, and the adoption of ecologically oriented economic strategies. Addressing the conflicts between economic and environmental interests requires a paradigm shift towards an ecologically clean society.

1 Introduction

A person is a product of nature and exists in a relationship with all natural objects, but in order to better understand the significance of all the nature that surrounds a person in his life, we turn to their separation. Immediately after that, it becomes clear to us that man cannot exist by himself without the rest of nature, because nature is, first and foremost, the environment of human life. This is the first and most important role of nature.

An important feature of the globalization of the economy is the increasingly close relationship between its development and changes in nature. First, this concerns problems such as pollution and destruction of environmental elements and the practically

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uncontrollable increasing consumption of natural resources, resulting in a shortage of resources. This situation is characterized as a global environmental crisis and has come to be perceived as a threat to the very lives and development opportunities of subsequent generations. Currently, the economic growth of the Republic of Uzbekistan is almost entirely due to the increased use of resources and sources of secondary means of consumption. This is due to the enormous expansion of the exploitation of subsoil resources and the growth of the technosphere. In the context of globalization, in order to identify the potential for the development of a new quality of the national economy of Uzbekistan, an important issue is to identify the contradictions that arise between society and nature, associated with large negative externalities. This situation is largely determined by management decisions on the development and deployment of productive forces back in the middle of the 20th century; they were made with virtually no regard for environmental factors. Currently, it can be stated that, as a result of the increasing pace of economic development in the republic, the load on the natural environment is rapidly increasing. This dependence began to manifest itself more often and on a larger scale. In connection with this, a tense environmental situation arose in the country, and crises and sometimes catastrophic situations were created in certain regions and cities. Thus, underestimation of the environmental factor is fraught with many consequences that threaten the national security of the Republic of Uzbekistan and is also a limiting element for the economic development and social well-being of the country's citizens.

2 Material and methods

As Eastern and Western scientists discuss the current situation, modern society at this stage of its development has little difficulty crossing the threshold of nature's natural self-defense and saving it now with human efforts. came to a hopeless conclusion. They predicted the inevitable destruction of human civilization and all life on earth as a result of scientific and technical progress, and suggested leaving the scientific and technical revolution and returning to nature [1-2].

Western philosopher G. Keller and American biologists R. Seleris and D. Plett believe that crisis problems and environmental crisis are inevitable companions of the modern scientific and technical revolution.

Other foreign scientists believe that the scientific and technical revolution will solve the ecological crisis by itself, regardless of the nature of the social system. Other scholars limit themselves to abstract calls to identify real crisis situations in the modern capitalist world and to overcome such situations through a "revolution in human consciousness". The international non-governmental organization "Club of Rome" established in 1968, has a special place in this. Italian economist A. Pechchei's "Club of Rome" members include representatives of various professions from many countries of the world, including industrialists, economists and others. The Club of Rome has set itself the task of attracting the attention of the world community to the approaching environmental crisis [3-6].

Prominent representatives of the "Club of Rome" are J. Forrestoras well as Professor D. Meadows of the Massachusetts Institute of Technology (USA).

In the models of J. Forrester and D. Meadows (as a way out), it is recommended to maintain the growth of the population of the planet and stabilize industrial production. D. Meadows group's report to the Club of Rome states that "Man can choose the limits of growth and stop at any time, which can weaken the strong influence on nature."

Two years later, the "Club of Rome" offered its new project "Humanity at the turning point", created under the leadership of M. Mesarovich and E. Pestel. The latter set the task of analyzing many factors and thereby localizing crisis situations and finding opportunities for their prevention. In their model, the world is presented as 10 regions. The countries that are

part of the region are united on the basis of taking into account the commonality of history and lifestyle traditions, economy, socio-political order, as well as most problems. The model considers the evolution of the world system in a way similar to that of an organism, in which the specialization of its various parts and the functional relationship between them are observed. This approach, according to the authors, determines the possibility of determining the main connections in economic, demographic, energy and other processes.

The authors conclude that the world is threatened not by a global catastrophe, but by a series of regional catastrophes that will occur much earlier than D. Meadows and J. Forrestor predicted. "Limited growth" is the main conclusion of the new version. If humanity is re-directed to the path of limited growth, then a new world of interconnected and harmonious parts will be formed, each bringing a unique perspective to one or another area of the world system. Scholars of the bourgeois-reformist school extend this obviously false conclusion not only to the capitalist but also to the socialist system.

In recent years, there has been a certain evolution in the views of the members of the Club of Rome. If the first concepts predicted the impending disaster due to the existence of material limits of humanity, then it can be observed in the sixth report to the club, "Educational project" developed at the initiative of A. Pechchei. (albeit in an abstract form) to at least recognize the need for social change. However, social problems are considered in different socio-economic formations without taking into account their uniqueness.

Life has shown that we have long had the wrong trends in environmental management, including:

a) the desire to force nature to develop contrary to its laws. This is called environmental voluntarism. Examples of this phenomenon include the extermination of sparrows in China. Also, attempts to return rivers in the Soviet Union, etc.

b) ignoring the universal connection and interdependence of things and events in nature. Human ecological myopia is visible in many actions. In order to bring some benefit to himself, man built the largest artificial lakes - reservoirs—on the rivers. However, if we compare the damage caused by these actions, it covers all the benefits that they have taken. Another example is the invention and use of a powerful chemical poison - DDT - in the fight against agricultural and household pests. It turned out that the pests adapted very quickly, and new generations of pests felt comfortable around the poison. But as a result of its use, toxic chemicals entered all elements of the biosphere (water, soil, air, animals and even people). DDT has also been found in places where it has never been used as a result of migration in the biosphere, for example, in long-term ice deposits in Antarctica, in the meat of penguins, in the milk of nursing mothers, etc.

c) thoughts about the inexhaustibility of natural resources. This simplistic misconception of the limitlessness and bottomlessness of natural resources has led to the development of energy crises in some countries today; At the moment, in a number of countries, they are forced to use unproductive mines of some minerals because they are running out. Another example: Not all plants in the United States today cover the costs of industrial oxygen consumption, and therefore America is dependent on other countries for oxygen consumption. In addition, the reckless destruction of some species of animals and plants has led to their disappearance from the face of the Earth. Today, about 1,000 animal and 20,000 plant species are on the verge of extinction.

According to many scientists, we are approaching an "ecological crisis" caused by the collision of unlimited and rapidly growing needs and all the activities of human society with the limited size and resources of our planet.

The amazing advances of our century have led us to "the pernicious illusion that, with the help of our machines, we have finally escaped the pressure of natural conditions." This idea is the opinion of the famous American environmental biologist Barry Commoner. He came to the conclusion in his research that this human fallacy has brought almost the entire human

race into crisis, leading to the degradation of the environment on which all its activities and ultimately life are built.

According to B. Commoner, man has opened a circle of life that should have been closed by nature - and if he wants to survive, he should return his debt to nature as soon as possible. This, of course, is the main idea of life. Analyzing the causes of pollution of the main elements of the environment, B. Commoner cites four "laws of ecology". These laws should guide humanity in its interactions with the natural environment.

B. Commoner named these laws as follows:

Everything depends on everything;

Everything must go together;

Nature knows best;

Nothing comes for free.

Let's take a closer look at each of these laws.

Everything depends on everything

This law has been known to mankind for a long time. It has been noted for a long time that there is a huge network of connections in the ecosystem between different living organisms, populations, and species, as well as between individual organisms and their physical and chemical environment. These connections developed over the long evolution of our planet and were refined and adapted over the years by the evolution of organisms so that everything was harmonious. As a result, balance, metabolism and energy balance were formed in the ecosystem. This indicates the perfection of the ecosystem.

Thus, the ecosystem forms a chain, the individual links of which are elements of living and non-living nature.

In recent decades, man has begun to break the individual links of this chain, disrupting the balance in nature through his activities. He "opened the circle of life and turned its inanimate cycles into linear chains of man-made events: oil is extracted from the ground, processed into fuel, burned in engines, and turned into harmful gaseous products released into the atmosphere. There is smoke at the end of the chain.'

B. According to Commoner's first law, everything must be connected and have no end, that is, it must go in a circle. Mankind's disruption of natural cycles has led to an ecological crisis.

Russian writer and journalist V.P. Peskov says about this: "Everything in nature has certainly been connected to each other for millions of years; everything has been changed and polished. Knock one rock out of this stability, and an avalanche begins."He goes on to say: "We, with all our literacy and wisdom, did not until recently know (and still do not know) how intimately all living things on earth interact. (We still know little.). This phenomenon, called equilibrium, plays a crucial role in maintaining life on the planet. To throw any connection out of balance will break the living chain."

That is, the ecosystem is a chain consisting of individual small links, and if at least one link of this chain is broken, then this chain can break. Therefore, a change in one link of this chain leads to a change in the activity of other links.

For example, let's take a freshwater body and consider the chain of connections in it:

fish - organic waste - decomposing bacteria - inorganic products - algae - fish.

Let's say that unusually warm summer weather causes an unusually rapid growth of algae. This leads to the depletion of inorganic nutrients. Thus, two links of this chain, algae and nutrients, leave the state of equilibrium, but in opposite directions. The ecological cycle mechanism will soon return the system to a state of equilibrium. As the amount increases, the algae becomes a more accessible food for the fish, which reduces the algal population, increases the amount of waste in the fish, and therefore increases the nutrients in the water after the waste is broken down. Thus, the amount of algae and nutrients returns to the original equilibrium ratio.

In order for the entire cyclic system to be in balance as a whole, the overall speed of its internal processes must be controlled by the slowest link, in this case, the growth and metabolism of the fish. Any external influence that accelerates a part of the cycle, thereby causing a part of the system to work faster than the whole system, has negative consequences. The speed of individual processes in the cycle corresponds to a natural balance, which is achieved and maintained only if there are no external interventions in the system. When a new factor enters the cycle, it is not controlled by internal self-regulating relationships and threatens the stability of the entire system.

Human interaction with nature is one of the most complex and intractable problems of our time. Today, it has become clear that the tasks of environmental protection and economic development are related to each other: sustainable economic development cannot be ensured by the destruction of the natural environment. The main subject of ecology is the study of a set of living organisms that interact with each other and form a certain unit (ecological system) with the environment, within which the process of energy and organic matter transformation will happen. At present, large-scale research is being carried out to determine the limits of permissible loads on the natural environment and to develop complex methods of eliminating the objective limits that appear in environmental management. The ecological-economic system is a set of phenomena that includes society as a socio-economic whole (but primarily economy and technology) and natural resources that have a positive relationship with the rational management of the environment. For example, the rapid development of the economy in a region with large environmental resources and good general environmental conditions, and vice versa, the rapid technological development of the economy without taking into account the environmental limitations, will lead to a forced stagnation in the economy. The economy is always aimed at meeting the material needs of society.

As a result, economic development in the 21st century cannot be imagined without scientific and technical progress and without ensuring and maintaining constant growth rates of production, which implies increasing dependence on natural resources.

3 Results

Of course, the available natural and human resources, the level of technical knowledge, and the system of institutions determine the conditions for the functioning of the economy. Society has always depended on natural resources, but the problem is that this dependence is not accounted for in the economy. People tend to consume, not save. On the one hand, the economy must develop; on the other hand, this development has harmful consequences for the environment. The conflict between man and nature, which has existed throughout the entire development of mankind, has become universal in our time and has determined the essence of the economic and ecological problem: economic development at the expense of ecological regression. Rice. 1. Scheme of economic and ecological problems. From the economic point of view, when solving this contradiction, we are not talking about the complete cessation of economic growth but about new directions of economic development together with ecological development.

In the figure below (Figure 1), the environmental damage and pollution abatement cost curves intersect at the point where the total monetary cost to society of solving the pollution control problem is at a minimum.

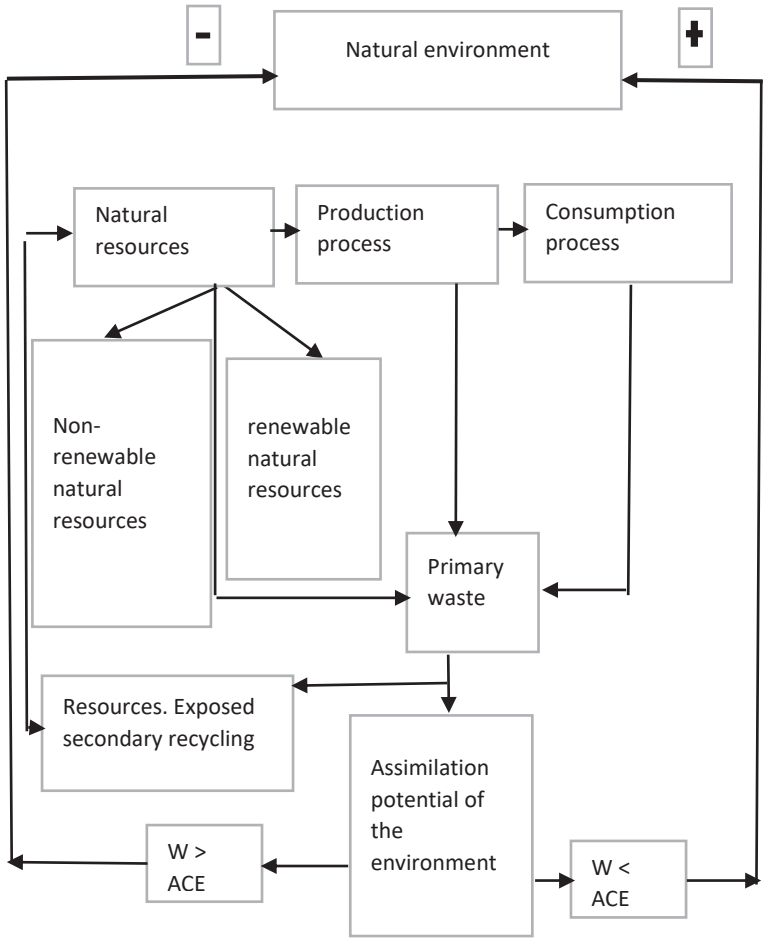

Fig. 1. Interaction between the economy and the environment, taking into account the main material flows

It is called the economic optimum point of environmental pollution, where, in theory, equality of costs and damages is achieved. However, the coordinates of both curves must be added to account for economic and environmental indicators of costs and damage. This amount is presented in the form of a total cost curve that reflects the total (both economic and environmental) losses. The curve highlights the area of minimum total losses, or the eco-economic optimal area. Achieving this optimality can be considered one of the most important steps on the way to sustainable development. Rice. 2. The ratio of environmental damage, environmental pollution prevention costs, and total (ecological and economic) damage.

Thus, the development of macroeconomic growth models should take into account the interaction of society with the environment. The rate of economic growth should be stable so as not to disturb the ecological balance, for example, 1%-3%. Since production is considered the main source of pollution, the object of research is to establish the relationship between production and consumption, taking into account the costs of environmental protection measures for product production. Economic growth exacerbates the environmental problem, because the process of accelerating material production leads to an increase in the impact on

the environment, which, in turn, disrupts the necessary ecological balance in a local and global sense.

The economic approach to environmental problems implies the need to take into account both the damage to nature and the costs to society of its elimination when evaluating the rationality of the production process. Currently, regions of the world are facing the threat of irreversible environmental destruction. Management in social and economic systems, not coordinated with the capabilities of the natural environment, its reproductive capacity and the laws of nature, has led to the emergence of trends that neither the planet nor its inhabitants can influence for a long time. It is necessary to ensure the rational (integrated, economical) use of natural resources corresponding to the ecological characteristics of a particular area; implementation of the ecological direction of economic activity, planning and justification of management decisions expressed in the progressive directions of interaction between nature and society; environmental certification of workplaces; and improvement of the technology of manufactured products. In greening the economy, we aim to reduce the man-made burden, preserve the natural processes in nature and natural potential through self-healing, reduce losses, comprehensively extract useful components, and use waste as a secondary resource. In addition to economic decisions, the interaction of economy and ecology should be focused on the main goal of providing a comfortable living environment for the whole society, which is possible only with a harmonious economic and ecological approach based on humanitarian and ethical principles. This approach has already been developed and is called the concept of sustainable development.

Sustainable development is a model of the socio-economic life of the society, in the implementation of which it is possible to meet the vital needs of the current generation without depriving future generations of such an opportunity. In other words, sustainable development is a balance between economic and environmental development. Economic aspects of sustainable development include:

Transition to eco-technologies and eco-techniques

Searching for a way of developing that minimizes the cost of environmental development

Replacing the cost-benefit system (based on the analysis of benefits and harms from environmental pollution) with the principle of economic efficiency (the need for costs to ensure the efficiency of environmental production and reproduction).

Environmental forecasting and monitoring: monitoring the state of natural resources and predicting the possible behavior of natural systems determined by natural processes and human impact on them.

Ensuring sustainable development requires not only investments in the environment or some new technologies but primarily social innovations, changing the priorities and goals of civilizational development. The concept of sustainable development involves changing the paradigms of the traditional economy, humanizing and greening its main principles, and searching for common approaches and consistency of the concepts of development of ecological and economic systems. The main principle of sustainable development (cooperation of countries and civilizations to achieve a balance of their interests based on mutual agreement) can be realized only if each country makes a serious and adequate analysis of its culture and is aware of its moral foundations. national value system, "openness", "flexibility" and "immunity" mechanisms.

4 Discussion

We live on a very small planet where everything is connected. A person is just beginning to realize his responsibility for his future. The environmental agenda is gaining momentum every year, and governments, corporations and schoolchildren from different countries are

joining the voices of several activists. Green technologies and environmental protection are becoming a part of our daily lives.

We use the planet's resources as if they were ours. In the 20th century, global production increased 20 times. As a result, people's well-being and quality of life increased. For example, from 1990 to the present day, the world's child mortality rate has halved, and the average life expectancy has increased from 59 to 73 years in the last 50 years.

Currently, 7.6 billion people live on our planet, which is only 0.01% of the weight of all living things. However, humans have already killed 83 percent of all wild mammals and half of all plants, according to World Economic Forum (WEF) analysts in their 2020 Natural Hazards Report. The current economic cycle - production and consumption, land use and urbanization, trade, and industrial forms - requires a radical revision of human influence on nature.

Humanity consumes 50% more natural resources than the planet can replenish. If this trend continues, in 30 years we will need three Earth-sized planets to meet all our needs.

We are now in a situation where, if we continue to produce and consume, it is clear that the next generation will have little chance of surviving on this planet.

Climate change in numbers:

150 billion rubles. annual damage to Russia as a result of the melting of permafrost. Total losses to the world economy are estimated to range from 24.8 trillion dollars to 66.9 trillion dollars.

82 of the 193 countries have incentives to encourage investment in renewable energy sources, clean generation, energy efficiency and pollution control.

In 2017, premature deaths related to air pollution cost the global economy $5.3 trillion.

Air pollution from burning fossil fuels costs $8 billion to the global economy every day.

5 Conclusions

Two groups of problems are clearly defined in modern global studies. The first is to look for a "no-go line" that defines the conditions of "survival" and the requirements for compromise. The second group is problems related to the acceptance of the terms of the agreement.

In the history of our planet, there have already been two epochs - the emergence of Life, that is, the emergence of living matter, and the emergence of Mind, with which living beings have the ability to know themselves. Today we are on the verge of the third period event designed to implement the Nature Strategy.

Now that the world is at a turning point, people are ready to develop a new idea about the society of the 19th century, humanity, its commonality and willingness to compromise—to break the usual way of life with difficulty. This ridge was invisible to previous generations, because the many perspectives lying behind it were hidden from us. But we have already seen the ridge, its passage, and it must define the "Strategy of the Mind" as a natural element of the "Strategy of Nature." Smart strategy is very important today.

Since the fate of humanity is inseparable from the fate of the biosphere, a radically new direction of research will appear - the study of the biosphere as an object of management. The first step in any research involving the selection and evaluation of management actions requires studying the response of the managed entity—in this case, the biosphere—to our actions on it. The scope of such research goes far beyond any national framework and requires an international effort. There's still a lot we don't know. And this means that we should preserve what nature has already created in all possible ways.

The study of natural systems allows us to talk about the limits of what is allowed. But where is the guarantee that the conditions for ensuring ecological stability found by scientists will be fulfilled?

For this, collective decisions are still needed, in which people act within the framework that nature allows. But people have different interests, and it is not at all clear that the recommendations of science will be accepted by them and the necessary agreement will be reached. Such consent is especially important when it comes to global issues, the absence of which can threaten the entire human race. Institutions of consent can be created only on a modern scientific basis, as a result of special research. The role of science should increase in all aspects of life. But this thesis, unfortunately, is getting into people's minds very slowly.

Thinking about the future, about the approaching era of the noosphere, scientists are increasingly inclined to think that the coming century will be the century of human science. If the first half of the 20th century was marked by the development of technical physics, if in the second half of our century the sciences of the living world began to come to the fore, then the 21st century. age of the humanities. This truth is not speculative - it is a necessity dictated by the moral imperative.

The moral imperative also requires a new way of thinking from politicians, because relations between states must change qualitatively, and politicians must recognize not only the impossibility of using force to resolve conflicts, but also the existence of common goals of environmental sustainability. . the need to change the morals and principles of the planet and, finally, human life.

We have entered a period in our history where one person can become the source of destruction for all mankind. In the hands of one person, unimaginable power can be gathered, carelessly used, and even criminally used. will cause irreparable damage to humanity.

Many people now understand this, but they associate these dangers with the famous "red button," the press of which sends out deadly rockets. In fact, everything is much more complex, and a person with power is capable of causing great harm to the development of society if he does not have the necessary moral qualities.

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