

## ECONOMICS

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### ECOLOGICAL AND ECONOMIC MECHANISMS OF SUSTAINABLE DEVELOPMENT

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#### **Abstract**

Civilization for thousands of years experienced many majestic blossoms and crushing falls. And on the ruins left after these crises, there never appeared new civilizations with the grandeur of the former, vivid examples of this are Babylon, Assyria, Carthage. F. Engels wrote that the civilizations leave behind deserts.. In this study, economic and natural cycles are studied, the relationship between them is shown, the concepts of sustainable development, global crises, cyclical development of society and economy, and indicators of sustainable development are also considered.

**Keywords:** economic development, economic growth, expansion, production, national economy.

#### **ECONOMIC CYCLES**

The history of the human society development of clearly shows that the market economy is able to create more goods and services for more people than any other economic system. And this is explained by the fact that in the conditions of a market economy a high motivation for creative work, progress is provided, people themselves make choice what to do. Thus, there is a high degree of risk and responsibility in economic activities, which develops initiative, enterprise and leads to high results of development of social production.

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The economic development of society is the evolution of its productive forces and relations, which takes place on the basis of expanded reproduction. There are many indicators of the dynamics of economic development that cannot be estimated, and are divided into the following groups:

1. indicators of economic growth;
2. indicators of the development of life.

Graphically, the dynamics of the volume of production in the scale of a market economy over a long period can be represented in the form of an increasing straight line (Fig. 1).

Under economic growth, it is customary to understand the increase in the volume of goods and services created over a certain period.

Economic growth is an increase in the scale of aggregate production and consumption in the country, which is characterized primarily by macroeconomic indicators such as gross national product, gross domestic product and national income. Economic growth is measured by the rates of growth and growth over a certain period of time (ratio of indicators at the end and at the beginning of the period or the ratio of the increase in the indicator to its initial value).

Economic growth is accompanied by an increase in gross product per capita and means an increase in the standard of living of the population.

Economic growth is a way to solve the problems of expanded reproduction.

Economic growth is the central economic problem facing all countries. According to its dynamics, it is judged about the development of national economies, the living standards of the population, as well how the problems of limited resources are solved.

Economic growth of the national economy can be realized in an extensive and intensive way.

An extensive type of economic growth presupposes an expansion in the scale of production. This means that economic growth is achieved through increase in the number of factors involved in production on the previous technical basis. Extensive factors of economic growth reflect the quantitative side of the increase in output due to an increase in the volume of used production resources. These include: the growth in the number of employees, in the volume of investments and growth of consumed raw materials.

An intensive type of economic growth involves more efficient means of production, technologies and processes. This means that economic growth is achieved by improving the use of production factors. The intensive factors of economic growth reflect the qualitative side of increasing output by improving the efficiency of the use of productive resources. These include: improving the

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skills of workers, the economy regime, scientific and technological progress, improving technology, labour and production organization, improving product quality.

In reality, there is no net extensive and pure intensive type of economic growth. They coexist side by side; the impact of extensive and intensive factors on economic growth is tightly intertwined. For a market economy, periods of predominantly extensive and predominantly intensive economic growth are characteristic.

There are two approaches of high rates of economic growth.

1. Arguments "For" high rates of economic growth.

- The living standard of the population is growing,
- Equalisation of the population income,
- Infrastructure is developing,
- Opportunity of helping to underserved people.
- Labour productivity is raising.
- Production is expanding, etc.

In a situation when the economy is growing at a high rate, more goods are produced for society and more needs are met, so in this case two more indicators should be taken into account: product quality and product growth rates. If they are dominated by elements of capital, the population does not get benefits since the share of goods remains insignificant.

2. Arguments "Against" high rates of economic growth argue that there is a meaningless overspending of limited resources, since economic growth is provided solely through technical progress. As a result:

- The insignificant needs of the population are met.
- The environment is polluted, which leads to a deterioration in the health of the population
- leads to a sharp stratification of the population according to income levels

Negative rates are inherent to developing countries and indicate a crisis in the economy.

There is also a type of a zero rate of economic growth, which does not create negative consequences for the short-term period, since it helps to reduce resource intensity, due to higher labour productivity and reimbursement of funds.

Constant economic growth in a market economy has a number of significant shortcomings (inflation, unemployment, etc.), including cyclicity.

The economic system is characterized by two opposite states: equilibrium and disequilibrium.

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The equilibrium state of the economy implies the coordinated development of market indicators. According to scientists, economic equilibrium is an objective indicator of economic growth. At the same time, economic growth is not always in a state of macroeconomic equilibrium. And macroeconomic equilibrium, in turn, does not always indicate a stable economy.

The economy comes to a disequilibrium state, when economic indicators, such as output, price level, employment level, rate of return, interest rate of credit and other indicators are distorted.

It can be concluded that the economy functions with certain regularities, like the development of the world. One of such regularities is the frequency of ups and downs in production. Economists call this phenomenon a cyclical economic growth.

Thus, the social and economic form of the disequilibrium development of social reproduction is called cyclicity or a cycle. The market economy is inherently prone to the periodic recurrence of phenomena, i.e. it develops cyclically.

There are many definitions of the cyclical nature of economic growth or the economic cycle.

Cyclicity is the universal form of the movement of national economies and world economy as a whole. It expresses the uneven functioning of various elements of the national economy, the replacement of the revolutionary and evolutionary stages of its development, economic progress.

Cyclicity is the most important factor in economic dynamics, one of the determinants of macroeconomic equilibrium. The most characteristic feature of cyclicity is that the movement doesn't go in a circle, but in a spiral.

Cyclicity is a form of progressive development.

Cyclicity is a movement from one macroeconomic equilibrium in scale of at least the national economy, to another.

Cyclicity can be considered as one of the ways of self-regulation of the economy.

Cyclicity is a social and economic form of expressing the unevenness of the functioning of the process of reproduction.

Cyclicity is characterized by periodic ups and downs of market conditions.

The cyclical nature of economic development or the economic cycle is the continuous fluctuations of the market economy, when production growth is replaced by a recession; an increase in business activity is a decrease.

The economic cycle is a form of movement and development of the economy.

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The economic cycle is the wave-like fluctuations of the economy around the general direct (trend) of economic equilibrium.

The economic cycle (wave) is a common feature in almost all areas of economic life and for all countries with a market economy.

The economic cycle (waves) are periodic fluctuations of business activity in a society.

ECONOMIC CYCLES, a term that indicates regular fluctuations in the level of business activity from the economic boom to the economic downturn. The cycle of business activity includes 4 phases: crisis, depression, recovery and recovery (Figure 2).

### **1 CRISIS.**

The mass of unrealized products is increasing; profits decrease; the loan interest grows; loans are reduced, non-payment crises; massive bankruptcies, rising unemployment; falling of stock quotes; depreciation of fixed capital. In other words, there is a decline in business activity.

### **2 DEPRESSION.**

Decrease in the rate of production decline (stagnation); unrealized commodity stocks are coming to the end; the fall of investment and consumer demand is damping; mass unemployment and low prices are persisting; in the economy begins the accumulation of capital and the emergence of growth points.

### **3 RECOVERY**

Growth of production volumes to pre-critical level; increase in demand for consumer goods and services as well as factors of production; renewal of fixed capital, higher prices, lower unemployment.

### **4 SURGE**

Continued growth in production and renewal of fixed capital; increase in investment and consumer demand; increase of prices and incomes, reduction of unemployment, that is, business activity is increasing.

Each crisis ripens in the phases of recovery and recovery. Reproduction takes place on an essentially extensive basis. Then the growth rates of production begin to outstrip the growth rates of effective demand, and the overproduction of goods begins.

The depth of the process, which affects the duration and depth of cyclical fluctuations, is the movement of investment. The crisis forms the starting point for new mass capital investments. Firstly, because it provides the basic capital. thus creating the conditions for the renewal of the production.

Secondly, it urges that such update has taken place on a new technical basis which allowed reducing production costs and restoring the pre-crisis, and then providing a higher level of profit.

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Thus, the economic crisis epicentre of the cyclical movement reveals not only a limit, but also an impulse in the development of the economy, performing a stimulating function (production costs are reduced, profit increases, competition grows, morally obsolete means of production are replaced, capital is renewed on a new technical basis). This crisis gives rise to a predominantly intensive development of the economy.

During the crisis, the moral wear of machinery and the dynamics of scientific and technological progress are such that the updating of fixed capital is made asynchronous with respect to the scale of the entire economy. An additional unevenness gives the mass renewal of fixed capital the volatility of the conjuncture. Therefore, a real cyclical process is a complex phenomenon, conditioned by interrelated factors - the turnover of fixed capital, scientific and technological progress, the dynamics of the conjuncture. Accordingly, in order to understand this cycle, all these factors must be studied in their conjuncture values and dynamics.

Although it is commonly believed that changes in business activity are directly or indirectly related to the economic cycle, there are other factors affecting the state of the economy. The most important of these are seasonal fluctuations and long-term trends. The influence of seasonal fluctuations can be traced at certain times of the year, for example, shortly before Christmas or Easter, when business activity increases, especially in retail trade. In other sectors of the economy, for example, in agriculture, automotive industry and construction, there are also seasonal fluctuations. Centuries trends determine the long-term increase or decline in economic growth.

The cyclical essence of social reproduction is not limited to economic or business cycles. In the economy there are many objective fluctuations that are associated with the renewal of different elements of capital or have a social essence. Based on this, the following types of cycles are distinguished:

- Short-term cycles or Kitchin cycles lasting 3-5 years, generated by the dynamics of the relative value of inventories in enterprises. E. Hansen associates "cycles of Kitchin» with the uneven reproduction of working capital, and U. Mitchell associates them with fluctuations in money turnover.

- Medium-term cycles (industrial cycles) associated with fluctuations in demand for equipment and building materials, which last 7-25 years.

- Cycles of S. Kuznitsa. Their duration is limited to 18-25 years, and the driving forces are changes in the reproductive structure of production (often these cycles are called reproductive or building);

- Cycles of K. Zhuglyar, periodicity of 7-11 years, which are the result of interaction of diverse monetary factors.

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- Long-term cycles or Kondratieff cycles, lasting 40-60 years. Their main driving force is a radical change in the technical basis of social production, its structural reorganization associated with the introduction of new technologies in production.

In this connection, the time intervals for the flow of long waves were specified:

1st wave: from depression in 1772-1783 till the instability of 1812-1825;

2nd wave: from the depression of 1825-1838 till the instability of 1866-1873;

3rd wave: from the depression of 1873- till the instability of 1913-1929.

4th wave: from the depression of 1929-1938 till the instability of 1966-1974;

5th wave: from the depression of 1974-1982.

- Frequent business cycles, covering a period of 1 to 12 years and existing due to fluctuations in investment activity.

Modern theories of economics consider important to study the connections of different types of economic cycles. Theories of economic cycles occupy an important place in economic science. These theories study the principles and indicators that cause changes in business activity. There are different directions of economic cycle theories (K. Marx, K. Zhuglyar, Tugan-Baranovsky, P. Samuelson, Houtry, Schumpeter, Hansen, Lique, Bedgoth, Hobson, Foster, Cutchings, Hayek, Mises, Jevans, Moore, JM Keynes). Despite the great difference in views and different approaches in the development of countercyclical policies, all the concepts of regulating cycles can be divided into 2 directions developing on the basis of a classical school:

- neo-Keynesian theory,
- neo-conservative.

### **Economic and natural cycles**

Scientists believe that cyclicity is a universal form of movement of nature and society. In natural cycles, change occurs with the objective necessity at the same time, with constant duration, rhythmically and inevitably (day and night, change of seasons). The cyclical nature of economic development is less pronounced and more controversial. In nature, significant changes in cyclicity are the result of millennia. In the development of society, the duration of cycles can change in a very short time. All these features are caused by the fact that economic cycles are associated with human activity, with its specific goals and methods of implementation.

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Table 1.

Characters	neo-Keynesian theory	neo-conservative
Orientation	On demand	On Supply
Aims	Regulation of the economy as a whole (macroeconomics)	Creation of incentives for the activities of individual firms (microeconomics)
Regulatory Priorities	1. Fiscal policy (associated with an increase or decrease in state spending, and tax policy (manipulation of tax rates, depending on the state of the economy)) 2. Monetary Policy	1. Credit-monetary policy (based on monetarist theories, which primarily focus on the volume of the money supply and its regulation) 2. Fiscal policy
The state role assessment	Encouragement	Limitations

However, man in the creation of artificial processes must proceed from the possibility of forming a relatively stable and equilibrium state of the geosystems. In this case, interval theories describe the economic cycle, taking into account the appearance of internal factors inherent in the very structure of economic systems, while external theories taking into account external factors reflecting the state of the environment in which the system moves. The combination of these factors causes changes in the parameters of the formation of systems during the rise and fall of their economic activity, as well as in the destruction of systems and connections, makes it possible to classify factors in terms of functional orientation into two groups that create a certain economic background for the development of cycles over time along the entire set of directions Human activity. The first group of factors characterizes the natural background, as we know, aimed at the self-structuring of systems, and, therefore, proceeding with the predominance of structured results over degrading ones, and the second is the economic background created under the influence of unconscious and conscious human actions. The first, basic, natural and most significant economic background is created by the natural state of nature in the joint functioning of geo, hydro, and biospheres. The effectiveness of natural processes is inherent in their purposeful self-organization. Therefore, the natural environment is basic, economic and effective. As noted earlier, in the conceptual foundations of the functioning of nature, the environment acts as the basis for the development of the entire body of natural processes. The natural background provides the processes and results of the development of all



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kinds and resources. On the basis of these resources, a person receives natural benefits and on the basis of them creates an artificial production of goods and services. It is clear that the natural background is in self-regulation, relative equilibrium and nonequilibrium, stable and unstable states. The processes of the main effective natural background of a person and evolutionarily develop it, in order to delegate the basic economic functions of exchange artificial processes. By creating artificial exchange processes, a person helps the self-organization of the universe structures by searching for an alternative choice of resources, the production of structured compounds, their consumption and distribution in those spaces that the nature itself can perform these functions economically only with actions that are ineffective for it.

But at the same time, the economic natural background creates its economic agent (person) and transmits through his genome the makings of hereditary development in the form of ensuring effective and purposeful actions combined with the actions of nature. Therefore, the evolution of human development is based on the genotype and the formation of a phenotype under the influence of human contacts with the environment. In the biological world were created and strengthened with certain lags actions functional from the cellular level to the level of highly developed structures of animals and humans, thus forming distinctive layers of genotypes. Thus, the economic background of human activity (1-5) is subdivided into several subfunds,

- Reproduction background (5) - action functional. It is based on the combination of several functions forming a single whole, which is aimed at ensuring its characteristic goal, in this case, offspring. This subfield is the main one. It determines the viability of any population, including the human community.

- Spiritual subfield (4) is the functional of actions. It is characterized by the sensuality of the systems to all the effects that arise in the course of functioning, and also by the ability of the system to increase its readiness for various actions.

- Communicative-informational subfield (3) - the functional of actions. It ensures the orientation of the person in space and time, gathering information about the environment, the presence of resources, and the possibilities of using them for direct life support.

- subfield of mind (2) - functional. Strengthening the functional of the person is supplemented by results due to the knowledge of the phenomena and experience of all other subfields. It is a well of fundamental knowledge of a person who uses it in his life's practice.

- subfield of production (1) - the functional of actions - represents a part of the functional and economic background, a set of the experience compressed

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and repeatedly tested by mankind, received by it and constantly used in practice with unquestionable scientific and experimental results in all directions of human activity, which are aimed at obtaining productive results.

With (1-5) subfields, which are the basis of artificial exchange and are necessary for life cycles and continuation of artificial processes in the country, etc. The equilibrium and stable state of the economic background can be disrupted by the influence of both natural and artificial processes.

Most likely, the basis for determining the magnitude of the economic cycle is the speed of motion along the trajectories, development of the focal points of equilibrium and instability along the spiral, i.e. the development of processes of approximating C1 to a stable equilibrium A and the process of removing C2 from it (Fig. 3a).

The economic cycle is regarded as a recurring real increase in production relative to its average value against the background of the contraction of the equilibrium region from its maximum value  $a_1$  for the minimum  $a_2$ , and then increasing again to the maximum value  $a_3$  during the trends of decline in production to a depth  $(a_1 - a_2) \setminus 2$ . Such a continuous cyclical process of recession-recovery is called a crisis arising on the background of interactions of the structure of the system and the parameters of the environment at the allowed rates of development.

If, however, these speeds are reached critical values, causing discontinuities in the integrity of the system and in its cycles, then a catastrophe occurs with the disruption of ties between destruction, elements, and even the living world. Catastrophes and crises are of a local or global nature and are associated with the depth of the instabilities.

If the system of material-energy exchange under appropriate conditions is able to restore equilibrium in the state itself without external assistance, such a system will continue to develop. In the worst conditions, there are artificial processes that require regulatory actions on the part of a person with the manifestation of his unconscious and conscious actions.

The concentration of actions in the economy, as in any combination of the processes of natural and artificial exchange, has two consequences: structured, leading to self-organization of systems, and degrading, causing their destruction. Everything depends on the magnitude of the concentration of elements and causes actions-power stresses and deformations, pressure of ownership, monopoly in production, on the market, in political power, etc.

The choice of harmony between structuring and degrading actions is the main task, both natural selection and forced choice in the areas of economic decision-making.

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With natural selection of actions and results, nature has been coping for billions of years. Mankind, considering its small geological history, is still learning to make rational decisions against the background of scientific and practical knowledge of the world. And he succeeded in this, if a person did not leave the natural background of the binding energy of the systems. But as soon as this boundary is broken, the higher levels of the hierarchy of the geosystem include corrective actions, the consequences of which are increasingly experienced by mankind.

The equilibrium and stable state of the economic system can be broken, and can serve development, crisis phenomena under the influence of irrationally made decisions in the field of entrepreneurship, the organization of the market, in the field of technical and social solutions, etc.

For example, inadequate consideration of the physical and moral wear and tear of technical systems during the approbation period can initially cause a boom with an increase in the demand for innovations every 10-15 years or lead to the rejection of these systems with a decrease in their proposals every 3-5 years if the expected built-in effects are not confirmed. On the other hand, there can be a boom and a recovery of the economic cycle curve under the influence of a breakthrough in new high technologies, inventions that have radically changed the structure of production.

The most serious problem arises from the inability of human behaviour in economic cycles. Note that in this situation, a person is formed and characterizes in its economic and economic activities the unity of the five components:

- as an element that is reproduced on the basis of the natural background regularities and these regularities are manifested in its behaviour;
- as a representative of the natural environment, he absorbs its results, and through them perceives the objectivity of natural background factors;
- as a subject, who all creative and spiritual needs, including qualitative and quantitative changes of any product with the help of artificial processes created by it, bases only on natural processes resources;
- as the creator of the results, which are described by the factors of the artificial background;

### **LIMITS OF GROWTH AND SUSTAINABLE DEVELOPMENT**

In 1972, the well-known book of experts of the Club of Rome Donella and Denis Meadows and Jorgen Rengers "Outside Growth" was published, which gave a theoretical description of the collapse of the economy that has reached the limits of its growth. This book predicts a crisis in the limits of growth of the world economic system for 2015-2020 period. The authors of the

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book conducted a computer calculation, in which the cause of the collapse is the depletion of natural non-renewable natural resources. The costs of industrial capital increase to such a level that the colossal expenditure of resources is required for exploitation. When resource prices start to increase and their deposits are depleted, it becomes necessary to use increasing volumes of capital in resource industries, which reduces the share of investments in other industries. Investments are reduced to such an extent that they no longer cover the depreciation of capital, and the crisis of the industrial production base is coming. Over time, other branches of the economy come to the same state. The population begins to decline when the death rate grows due to a lack of products and medicines.

All socio-economic and political processes are accelerating (the globalization of the economy, the flow of influence into the hands of TNC management). Humanity continues to deplete the reserves of fossil resources and damage natural ecosystems. At the same time, computer technologies are developing, and informatization of all aspects of life continues. The stratification of the world community into prosperous and impoverished nations is deepening. Similar processes take place within individual countries. Considering all of the above, and considering the analytical materials of the financial crises of recent years, we can conclude that we will not be at the apex of the economic growth curve in 2015-2020, but now we are in 1995-2000. Conclusion: the global systemic (socio-economic) crisis can develop on any day.

The most obvious consequences of the immediate crisis are:

- Deeper de-globalization of the economy of the widened range of its growth (the rapid restoration of the full sub-statehood of states and the strengthening of interstate borders and barriers, that is, the collapse of the world into many closed state systems with varying degrees of self-sufficiency).
- The world market will disappear as a phenomenon, most of the industries oriented to export, and enterprises scattered in different countries will collapse.
- International bodies (UN, World Bank) will disappear from the political arena, the notion of "international law"
- States renounce obligations for the social protection of citizens, the content of education, science and public health. This will lead to the emergence of authoritarian regimes.
- Inequality of opportunities can cause a surge of armed international conflicts for a new re-division of the world (poisoning of the biosphere by radioactive and chemical substances)

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- There is no organized counteraction to the crisis development of the world civilization.

In the "peaceful" development of events, technological decline will lead to an escalation of the processes of anthropogenic climate change, which can stop with the decline of global paper production and, consequently, trade in forests.

The term "sustainable development" was introduced into political circulation by the report of the commission Gro Harlem Brundtland "Our Common Future" in 1987. Sustainable development is, firstly, a development in which anthropogenic impact on the biosphere does not exceed the limit beyond which it begins to degrade. Secondly, it is a development in which a person is preserved and reproduced as a biological species, without exerting a destructive influence on him, for example, drugs, alcohol, chemical toxicants, information noise, etc. And, thirdly, this development, in which there is no destruction of the stabilization mechanisms of civilization (judicial and law enforcement systems, political organizations).

Experts of the Rome Club characterize the current situation as a crisis of civilization, one of the components of which is the ecological crisis. And in order to understand what development is sustainable, it is necessary to study the causes and consequences of crises.

In 1992, the Rio Declaration, Agenda 21, the Convention on Biodiversity and Climate Change, forest principles were adopted in Rio de Janeiro. However, these ideas could not be realized, as indicated by indicators that record progress after the Rio: the increase in the concentration of greenhouse gases in the atmosphere, the continuing processes of desertification, deforestation and depletion of soils, the increase in the level of contamination of the high-level waters and the world's oceans, the reduction of biodiversity. The political structure of the world as a whole declined.

The World Summit on Sustainable Development Rio + 10 was conceived back in 1994, to take stock of development after the Rio. However, the draft political declaration "Rio + 10" does not contain anything new in comparison with the Rio Declaration and Agenda 21.

The Rio underestimated the inertia of economic development, the reluctance of the third world to abandon the goals dictated by the current level of consumption in developed countries, and internal resistance in developed countries to everything that is associated with a decrease in the rate of growth of material well-being.

To address current global problems, it is necessary for the countries participating in the Summit in Johannesburg to commit themselves in the following priority areas:

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1. Spreading the ideas of sustainable development and increasing the effectiveness of education for sustainable development (Developing global and regional education strategies and programs)

2. Creation of models for sustainable production and consumption (increase in energy conservation, restoration of destroyed ecosystems, etc.)

3. Weakening of the economic, social and environmental causes of poverty (internal and external). Strengthening control over factors that increase polarization in the development of civilization

4. Enhance public participation in addressing sustainable development issues at the international and national levels.

5. Establish an effective and transparent system of environmental management and sustainable development at the national and global levels.

6. Use of financial and economic mechanisms for sustainable development, in particular:

- Ensure the openness of distribution and expenditure of international financial assistance to sustainable development; International organizations need to improve aid delivery; Recipient countries should ensure effective use of international resources and openness for monitoring by various sectors of society;

- ensure that the environmental factor, based on socio-economic development indicators, is taken into account to determine the strategy for economic development;

- Facilitate further restructuring of the external debt of developing countries with economies in transition, taking into account the obligations of these countries to preserve and restore the environment and implement social programs for sustainable development;

- Develop mechanisms for international compensation for providing ecosystem services to some countries (ie for minimized economic use of natural ecosystems of global or regional importance);

7. Accounting for environmental principles in international trade and economic interactions of different countries.

8. To negotiate the mutual obligations of developed and developing countries, as well as countries with economies in transition, with a view to achieving sustainable development in the world (the "global compact").

9. To develop the concept of sustainable development, identify indicators and mechanisms for maintaining the health of the environment, as a necessary condition for ensuring human health.

For the transition to sustainable development, it is necessary to include the environmental factor in the system of basic socio-economic development

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indicators. In this regard, the development of criteria and indicators for sustainable development is performed. There are 2 approaches in this area:

- Construction of an integrated indicator on the basis of which one can judge the degree of environmental sustainability of social and economic development.
- Building a system of indicators, each of which reflects individual aspects of sustainable development, with the allocation of economic, social and institutional subsystems of indicators.

### **ECOLOGICAL AND ECONOMIC INDICATORS OF SUSTAINABLE DEVELOPMENT**

For a country to move towards sustainable development that does not destroy nature, it is necessary to move from the modern economic paradigm, which considers the effectiveness of the economy and nature protection as automotive problems, to an integral ecological and economic approach that integrates nature and economy as two interrelated components of the socio-ecosystem. With this approach, any decisions at the macroeconomic level should provide a double effect-economic and environmental.

Ecological and economic approach determines the need to consider economic mechanisms of conservation of wildlife on two levels:

#### 1. Macroeconomic level

The key tasks are:

- Ecologization of economic restructuring and changes in export-import policies;
- Decrease in the national economy of the share of nature exploiting and resource-extracting industries; increasing the share of production and technological chains, oriented to a high degree of processing of raw materials and the production of the final product;
- Decrease in the share of energy and resource-intensive industries; increase the share of high-tech industries, development of energy and resource-saving technologies; reduction of resource consumption per unit of output;
- abandoning technologies and industries that damage biodiversity in favour of environmentally friendly production and technology;
- changes in the structure of exports, a reduction in exports of natural raw materials and products with a low degree of processing, and an increase in exports of high-tech goods.

For the restructuring of the economy, an investment policy is needed that focuses on the priority development of high-tech and environmentally-friendly industries, as well as an increase in the country's investment attractiveness in these areas. Consistent environmental policy, the country's

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fulfilment of its obligations under international agreements, including the Convention on Biological Diversity, in the modern world is regarded as a factor of increasing investment attractiveness; these are indicators of civilized and legal business (in contrast to environmentally harmful industries)

- Formation of environmentally-oriented national accounts, binding the value of biodiversity in the country's macroeconomic indicators (including GDP-gross domestic product, GNP-gross national product) and the system of international mutual settlements.

Ecologically-oriented accounts should provide:

- Record of increment and loss of biodiversity, record of changes in the quality of natural objects under the influence of anthropogenic load and natural measures;

-Evaluation of environmental parameters of the country's development and the degree of its sustainability in macroeconomic indicators

- comparison of the effectiveness of the country's development alternatives taking into account the environmental factor;

- orientation of the indicators of the country's economic development on the volumes of used resources and raw materials which should be minimized;

- consideration of environmental and environmental costs in accordance with the recommendations of the UN Statistical Commission;

- Calculation of the net domestic product, which is a gross domestic product deducting consumption of fixed capital, including its reduction due to depletion of natural resources and environmental degradation;

- Reforming the taxation system (raising taxes for environmentally exploiting resource industries and reducing for high-tech industries;

- reinforcement of depreciation rates for environmentally harmful production and technology; consideration of the impact of technologies on biodiversity;

- introduction of taxes on environmentally hazardous products, taking into account its potential harm to biodiversity;

- Increase of payment for use of natural resources, increase of payment for normalized and collated pollution emissions;

- submission of tax incentives to organizations reinvesting profits for the implementation of measures for the conservation and restoration of biodiversity;

- ensuring targeted use of funds from natural resource taxes for environmental purposes)

• Establishment of a national system for the economic valuation of biodiversity as a national asset.



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- development of a system for the economic valuation of genetic resources.

### **2. The level of special ecological and economic mechanisms aimed directly at the conservation of wildlife**

Environmental and economic regulation systems include incentives (taxes and payments for the use of natural resources, tax incentives for environmental protection, etc.) and enforcement (administrative prohibitions, enforcement, fines) mechanisms. The effectiveness and expediency of applying economic incentives or administrative prohibitions depends on the state of the natural environment, the level of anthropogenic load, the characteristics of the economic complex and regional conditions.

The main directions of work at the level of special ecological and economic mechanisms are the following:

- Correction of the system of payments and penalties for all-legal or illegal impact on nature.

- Introduction of standards for the environmental management of enterprises, taking into account the requirements of biodiversity conservation

- Creation of targeted innovation funds for the development of resource-saving agriculture

- Stimulating the creation of markets for environmentally friendly products, technologies and equipment, disseminating environmental safety requirements for production as one of the main tools of market competition.

- taking into account the environmental factor, including the requirement of conservation of biodiversity, during privatization.

- Development of an environmental insurance system taking into account the risk to biodiversity.

- Development of environmental certification and licensing systems, taking into account biodiversity indicators.

- Introduction of biodiversity conservation objectives in the system of basic principles of economic organization and economic activities of industries exploiting natural bio systems (forestry, fishing for seafood), creation of an economic system aimed at their sustainable use.

- Support of commodity producers engaged in activities using traditional forms of management, adapted to the specific features of the natural and socio-economic conditions of different regions.

It is also necessary to consider the relationship between environmental and economic indicators and financial support. Indicators of sustainable development should reflect the economic, social and environmental aspects of meeting the needs of the modern generation without limiting the needs of future generations to meet their own needs.

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Currently, the environmental and economic analysis difficult areas account social and environmental factors. This is due not only to the underdevelopment, but also to the incompatibility of a number of indicators characterizing the economic, social and environmental effects from the use of natural resources and the implementation of environmental measures.

Transition to sustainable development has been widely discussed by economists. In Robertson's vision, it consists in the transformation of the economic system, taking into account the growing importance of the "human and environmental" factors, which should be based on the desire to create favourable conditions for people's lives and the natural environment. Needs of local consumption will be facilitated by the transfer of the tax burden to rental value and natural resources.

Other western economists also point the social nature of rents: R. Andellson, N. Tideman, M. Gaffney, E. Dodson, K. Feder, R. Banks, D. Picard, D. Miller, M. Hudson. In Russia in this direction it is possible to note the works of G. Titova, T. Roskoshnaya and others. The problem of the correct distribution of rental income is at the heart of many social issues and environmental problems. M. Gaffney recommends that authorities and scientists think about how to better extract revenues from various sources of rent for public needs or equal distribution. He notes that in each case there are technical problems. However, once resources are assessed in free world markets, the price indicators necessary to determine the amount of taxable surplus will appear. At the same time, S. Ivanovsky notes that at present the number of rent-forming industries is decreasing. GI Titova, [4] indicates that the greatest difficulties arise when calculating rents when using resources of multi-purpose (land, forest water resources). The conclusion is drawn on the need for a monetary evaluation of the natural resources for the study of rent movements.

Particularly difficult management task now is the protection of the environment near populated points. Compliance with the regime of necessary restrictions entails the alienation of a part of the population who has found themselves in the protection zone from the habitual environment and the deterioration of his social status. The reaction of the population to these restrictions, as a rule, is an even more intensive, illegal exploitation of natural resources. It is necessary to search for methods of state regulation of nature management, based on fundamentally new approaches to the protection of natural areas. In this case, an important task is to integrate social, environmental factors in the system of indicators of environmental sustainability. There is a need for indicators of sustainability. The results of adapting the UN methodological approaches to the monetary valuation of natural resources, taking into account social and environmental factors in some regions, have

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shown that monetary estimates can be used as indicators of capital measurement and the sustainability of the nature use of territories.

A difficult problem is the assessment of the benefits and costs associated with the development and use of environmental and economic indicators. The experience of international organizations and individual countries shows that the development of systems of indicators for sustainable development requires efforts and hundreds of qualified specialists and huge costs.

The twentieth century brought to humanity a lot of benefits associated with the rapid development of scientific and technological progress, and at that time put life on the Earth on the brink of an ecological catastrophe. Population growth, intensification of production and emissions polluting the Earth, lead to radical changes in nature and affect the very existence of man. Some of these changes are extremely strong and so widespread that global environmental problems arise. There are serious problems of pollution (atmosphere, water, soil), acid rain, radiation damage to the territory, as well as loss of certain species of plants and living organisms, impoverishment of bio resources, deforestation and desertification of territories.

Problems arise as a result of such interaction of nature and man, in which the anthropogenic load on the territory (it is determined through the technology related load and population density) exceeds the ecological possibilities of this territory, due mainly to its natural resource potential and the general stability of natural landscapes (complexes, geosystems) to anthropogenic impacts.

Economic and environmental approaches to assessing the results of human activities on the planet are directly opposite: economists evaluate these results in terms of increasing production and consumption growth, in environmental terms in terms of damage to nature and human health. Meanwhile, for an adequate assessment of the degree of human impact on nature, combined environmental and economic indicators should be used.

For many generations of people, progressive social development has been strongly associated with economic growth. But, developing industry mankind inevitably violates the natural balance in the natural environment. This can ultimately lead to self-destruction, because the dependence of mankind on nature does not decrease, but, on the contrary, it increases year by year. But the opposition to the progress of production is just as harmful to the human race: production and consumption in the sense of human reproduction, their inseparable connection is fixed in the economic categories "productive consumption" and "consumer production". The way out of this vicious circle

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may be to revise the strategy of economic growth in favor of a sustainable development strategy and create a new progressive technology.

Under the rational organization of nature management (sustainable development of the "society-nature" system), it is necessary to understand the system of activities ensuring the efficient, economic use and production of natural resources (raw materials and energy), as well as the most complete technological scheme for processing waste products, taking into account the interests of the developing economy and conservation Health of people.

The slogan proclaimed by Western experts on the rational organization of nature management by reducing the energy intensity of production is ultimately utopian. Energy saving is impossible in principle, and the savings are at the expense of environmental interests. It remains to be admitted that the ecological economy will never be economically efficient, and it will be necessary to seek new approaches to the rational organization of nature management.

Given all of the above, it becomes clear that the consequences of violations of natural phenomena cross the boundaries of individual states and require international efforts to protect not only individual ecosystems (forests, ponds, marshes, etc.) but the entire biosphere as a whole. All states are concerned about the fate of the biosphere and the existence of mankind, and are trying to create mechanisms for sustainable development.

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