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Article

Socioeconomic approaches to the development of methodological support for the environmental management system

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Abstract: Economic growth is a pressing issue facing the global community transitioning to sustainable development. Sustainable development is impossible without rapid economic growth limited by imperfect technologies and social structure. Most often, the limit of economic growth is related not so much to the amount of natural resources as to the possibilities of the environment. The atmosphere, water reservoirs, and the earth are already at the limit of their capabilities. This forces us to look for ways to develop production in combination with the economic and environmental spheres. Advanced companies are the first environmentally oriented enterprises, because reducing the amount of primary raw and other materials and energy, switching to secondary raw materials, and processing them reduces the cost of production, and, most often, brings additional profit. This study evaluates socioeconomic approaches to the development of the environmental management system. The creation of an environmentally friendly enterprise's field of activity is not only a solution to many economic and environmental issues but also one of the ways to transition to a normally functioning market system, given the financial capabilities of enterprises and the understanding of the necessity of state sustainable development by the company management and the population.

Keywords: socioeconomic problems; enterprise; products; green economy; sustainable development

1. Introduction

The only way to solve economic and environmental problems is to form an economic mechanism for sustainable development (Borodina et al., 2023; Rybak et al., 2023). The concept of economic mechanism indicates the method of organizing social production and labor. An economic mechanism is a set of various forms and methods of practical use of economic laws, i.e., economic management forms and methods brought into a system following the requirements of objective economic laws (Kaliyev et al., 2019). The economic mechanism is not the economic management itself but the prerequisites and methods of this activity and management to achieve the goals by influencing economic and environmental interests (Sergeeva et al., 2023; Stepanova et al., 2023).

The value of the economic mechanism is determined by the need to transform economic laws into the practical plane of the activities of economic entities. Due to

the lack of a well-developed economic mechanism in environmental management and protection activities of enterprises, environmental requirements can be ignored.

The analysis of trends in the economic development indicators of the Russian Federation with environmental and socio-demographic indicators indicates an aggravation of the environmental and socio-demographic crisis (Rednikova, 2023). In the total volume of industrial production, the weight of the industries that pollute the environment the most has increased significantly. These are electric power, fuel industry, ferrous metallurgy, chemical and petrochemical industries, agriculture, etc. (Firsova et al., 2019; Nasiyev et al., 2021; Nasiyev et al., 2022). The untimely renewal of main facilities, primarily environmentally friendly ones, has led to an increase in the proportion of pollution of the environment with harmful substances per unit of output.

The analysis of the regulatory environmental framework confirms that in market conditions of management, environmental safety is ensured using economic methods of environmental protection at the level of industrial enterprises that use natural resources (Rzabay et al., 2018). Government subsidies in industrialized countries amount to 60%–80% of the costs incurred by enterprises for implementing Environmental Protection Measures (EPM), which allow one to ensure the return on environmental investments within two to three years and receive additional profit in the future.

Increasing the efficiency of natural resource use and achieving balanced resource consumption are the priority areas in Russia, enshrined in thematic strategies. However, most target indicators set out in the documents are far from being met; some have negative dynamics. It is necessary to focus on at least three significant system-forming issues. The first is to identify the causes of a situation in which the state and society, having significant strategic reserves of various resources, use them insufficiently rationally.

The second issue concerns whether Russia, given the necessary funds, will be able to use them properly for sustainable development and turn its resources into effective capital and a powerful source of growth for the national economy. The third issue concerns accelerated integration into the global space, which requires the creation of a foundation oriented toward power decentralization. These issues necessitate the identification of systemic positions on transforming the Russian national economy into a sustainable social entity capable of self-reproducing and self-organizing to solve socio-economic problems.

Economic and socio-humanitarian prerequisites, including cultural, psychological, ethical, religious, and other factors, determine the need to achieve target benchmarks. The people of Russia, who own many natural and purely material resources, must develop the ability to transform them into capital. A resource becomes capital only in appropriate institutional conditions.

The transformation of material assets into productive capital is a rather complex process. Without it, ensuring sustainability in Russia is problematic. As business practice proves, in a permanent global socio-economic crisis, the most adequate basis for sustainable development of the national economy is resources. It is necessary to determine modern dominants, strategic foundations, and promising areas of sustainable development of Russia in the global environment, considering the analysis

and assessment of the latest scientific management concepts according to the world dominants of sustainable development for the future.

The paper is organized as follows. The first part explains the methodology; the second part presents the results and discusses the conclusions.

2. Literature review

Bhatti et al. (2024) note that the payment by enterprises for harmful emissions and discharges, even if they overestimate the maximum permissible standards, is several times lower than the funds they need to spend on EPM. This indicates the inefficiency of the current economic mechanism stimulating environmentally hazardous activities of industrial enterprises.

Kovshov et al. (2024) emphasize that enterprises and potential investors will save money only when it brings them real benefits. We agree with Afzali et al. (2024) that investing in environmental projects will create additional jobs in manufacturing, installation, and operation enterprises, positively affecting economic stabilization.

From the research by Bakhshianlamouki et al. (2023), Liu et al. (2023), and Mukherjee et al. (2023) it follows that improving the mechanism for stimulating environmentally safe activities of industrial enterprises is becoming particularly relevant today, since the industrial complex, playing a significant role in regional economy, carries a large anthropogenic burden on the environment.

However, the basic regulatory payments for environmental protection have increased 4.5 times (Deng et al., 2024; Luo et al., 2024a; Shakhmametev et al., 2018). Purker et al. (2023) conclude that it is necessary to significantly increase the standards for payment per unit of harmful emissions, discharges, and disposal of industrial waste. Environmentally hazardous enterprises are necessary but harm the environment. It would be wrong to place all responsibility for financing environmental activities solely on them.

Wu et al. (2024) rightly point out that if society needs products where production pollutes the environment, it must bear a share of the costs of EPM. It is also impossible to disagree with the opinion of Zhang et al. (2023) that the use of the existing temporary standard methodology for determining economic efficiency, EPM, and assessment of environmental damage causing environmental pollution to the national economy today does not contribute to the successful environmental activities of enterprises, since this methodology does not consider the features that have developed as a result of modern economic transformation.

Some authors (Agamirova et al., 2017; Dzhancharov et al., 2023; Luo et al., 2024b) emphasize that enterprises need to calculate the national economic effect to which they are not directly related through the introduction of environmental measures. When justifying the effect at the enterprise level, scientists note that it is necessary to use data that is difficult for enterprise specialists to calculate due to the lack of appropriate specialists or methodology.

We can add that when justifying efficiency at the enterprise level, it is necessary to involve appropriate specialists. On the one hand, very often there are no such specialists at the enterprise. On the other hand, there is currently no perfect methodology for conducting such studies, because usually, when determining the

effectiveness of EPM, a normative coefficient of efficiency of capital investments is used, which does not characterize the period of environmental investments and does not reflect the real period of the need to renew the main facilities.

This study aimed to evaluate socioeconomic approaches to developing the environmental management system.

3. Methods

The study methods were based on the following provisions:

(1) The existence of a regulatory environmental framework based on a system of collection, fines, and penalties does not ensure the creation of an economic interest in environmental protection activities at the enterprise.

(2) The methodology for calculating the effectiveness of EPM does not consider the requirements of the market economy and, together with the regulatory framework, provides such a low level of return on environmental investments that the practicability of calculating the effectiveness of measures is lost.

(3) Improvement of the environmental situation in a region is possible provided that industrial enterprises primarily responsible for environmental pollution create economic management mechanisms that contribute to additional tax investments for environmental protection purposes.

When solving problems aimed at determining the effect and choosing the payback period of the implemented EPM, the following formula can be used:

$$\sum_{i=t}^{T} \frac{K_u + K_{gt} + C_{ut}}{\left(l + E_{yg}\right)^t} \rightarrow min \quad (1)$$

However, this formula does not make it possible to estimate the payback period of the costs. To this end, we transformed Equation 1 into expression 2, which shows that it is advisable to implement EPM at a time when they can pay off over 2–3 years.

$$\sum_{i=t}^{T} K_u + K_{gt} + C_{ut} \leq 2 - 3E \quad (2)$$

where K_u is the initial capital costs for the implementation of environmental measures; K_{gt} is additional capital investments to ensure the normal operation of the environmental facility in the tth year; C_{ut} is the current costs of maintaining the environmental facility in the tth year; and E is the regulatory coefficient of the reduced non-recurring costs.

For this study, we developed criteria for evaluating the work of an environmentally friendly enterprise by types of production changes. The criterion of an environmentally friendly enterprise was not its size, but the methods of extracting industrial waste. The attractiveness of the economically clean enterprise sector was ranked in terms of supply factors, where the infrastructure factors were considered important, i.e., the availability of electric grids, highways, ports, airports, urban communications, trade, and the financial sector.

The expected priority level of products to ensure environmental safety in the main sectors of the national economy was determined. We found that the most promising sphere is the production of environmentally friendly products, the use of energy-

saving technologies, and recycling of secondary raw materials. The size of the potential clean technology market was also assessed. We established that the economic mechanism for stimulating and developing the activities of an environmentally friendly enterprise should solve two main and fundamental problems: ensure the most efficient use of natural resources to meet the production and non-production needs of society and ensure the profitability of an environmentally friendly enterprise.

4. Results and discussion

The analysis of the environmental and demographic situation confirmed the conclusion that it is necessary to develop economic mechanisms that make the business entity face environmental problems. The mechanisms should imply the economic interest of enterprises in their environmental investments; accounting for state long-term environmental goals through the fund redistribution system; interest in environmental investments expressed by banks and other investors; a simplified system for determining the amount of fees for environmental pollution made by enterprises; and gradual approximation of Ruddis to industrialized countries in terms of specific environmental pollution with harmful substances.

To solve the tasks, we propose to introduce preferential business conditions for enterprises involved in the process of manufacturing, implementing, and using environmental protection equipment, the essence of which is as follows:

(1) Taxation Incentives

First, it is necessary to introduce benefits at the state level for the payment of Value-Added Tax (VAT) for enterprises producing environmental protection equipment and carrying out work on its construction, installation, and maintenance. Reducing the VAT rate will reduce the price and increase the competitiveness of environmental services and equipment;

Second, to stimulate the environmental activities of enterprises, it is necessary to reduce the profit tax base on funds that they use to introduce resource- and energy-saving technologies, carry out EPM, and exempt within 3% of the wage fund for the implementation of these measures.

(2) Resource Efficiency Incentives

To stimulate the rational use of natural resources and energy carriers, it is necessary to reduce their price per unit by the percentage of reduction of the material and energy intensity of a unit of manufactured products by the enterprise compared to the previous year.

(3) Financial and Subsidy Support

It is necessary to open environmental subaccounts for each environmentally hazardous enterprise, which should be used only for financing EPM;

Offer leasing options for high-tech environmental equipment, supported by state subsidies to lower the cost for enterprises;

Allow enterprises to allocate charges related to environmental pollution, including 2% VAT, 3% social charges for salaries, and 70% of fines imposed on enterprises for violating environmental legislation to the environmental subaccounts. Provide an opportunity to hold interest-free environmental loans.

(4) Collaborative Responsibility

It is necessary to allow several enterprises, at their common request, to be jointly responsible for paying fees for environmental pollution, which will allow them to take turns to finance the implementation of EPM.

(5) Governance and Fund Management

To improve control over the targeted use of funds from environmental funds at the regional level and the interest of enterprises in their accumulation, entrust the general management of these funds to the supervisory environmental council formed from representatives of enterprises paying fees for environmental pollution.

(6) Environmental Fund Contributions

At the state, regional, and enterprise levels, implement progressive standards for permissible emissions, discharges, and waste disposal, recalculated based on production output (per 1 ruble of manufactured product).

(7) Progressive Standards for Emissions

To ensure additional revenues for independent environmental funds, allocate 3% from local taxes, 10% from the depreciation of basic environmental funds, and a percentage of increased production volumes, based on a progressive scale.

This indicator of specific environmental pollution should become the main one for evaluating the effectiveness of environmental activities at enterprises. The proposed economic mechanisms for stimulating the environmental activities of enterprises will ensure entry into the circle of ecologically advanced countries, which will have a positive impact on Russia's economic growth.

Economic growth is a pressing issue facing the global community in its transition to sustainable development. Sustainable development is impossible without rapid economic growth limited by imperfect technologies and social structure (Demkina et al., 2019; Konovalova et al., 2018; Mukhlynina et al., 2018). Most often, the limit of economic growth is related not so much to the amount of natural resources as to the possibilities of the environment. The atmosphere, water reservoirs, and the earth are already at the limit of their capabilities.

This forces us to look for ways to develop production in combination with the economic and environmental spheres. Advanced companies are the first environmentally oriented enterprises, because reducing the amount of primary raw materials and other materials and energy, switching to secondary raw materials, and processing them reduces the cost of production and, most often, brings additional profit.

It is impossible to achieve maximum production efficiency only through technological changes. It also requires a change in the main goals and objectives of social production and methods of achieving agreement between the economy and the environment, which have been in constant conflict until now. A comprehensive solution to pressing environmental, economic, and social problems is possible provided that the state economic policy becomes more environmentally friendly.

The creation and improvement of an environmentally friendly enterprise contribute to the unification of these goals. Thus, the need to create an environmentally friendly enterprise and determine its technological operation principles is important.

An environmentally friendly enterprise aims to produce environmentally friendly goods and services. The development of such an enterprise reflects the deep concern of the advanced society in the face of the growing environmental crisis and the

understanding of the economic benefits of reducing pollution and resource consumption. Filling the modern market with environmentally friendly goods and reducing man-made pollution has become a vital condition for sustainable development all over the world.

This is one of the most important ways to improve the efficiency of using natural resources and environmental protection. The ultimate goal is the profitability of reducing the amount of resources that enter and leave the economic system. To understand what a clean enterprise is, we formulated this term, the essence of which is that this is a type of enterprise activity that does not use or produce dangerous substances and goods and is not a source of pollution with substances that can negatively affect the environment and the products.

We believe that the criterion of an environmentally friendly enterprise is not its size but the methods of extracting industrial waste. An environmentally friendly enterprise is aimed at solving complex problems in economic, environmental, and social spheres. In a production environment, it can be classified according to the types of changes in production processes (**Figure 1**).

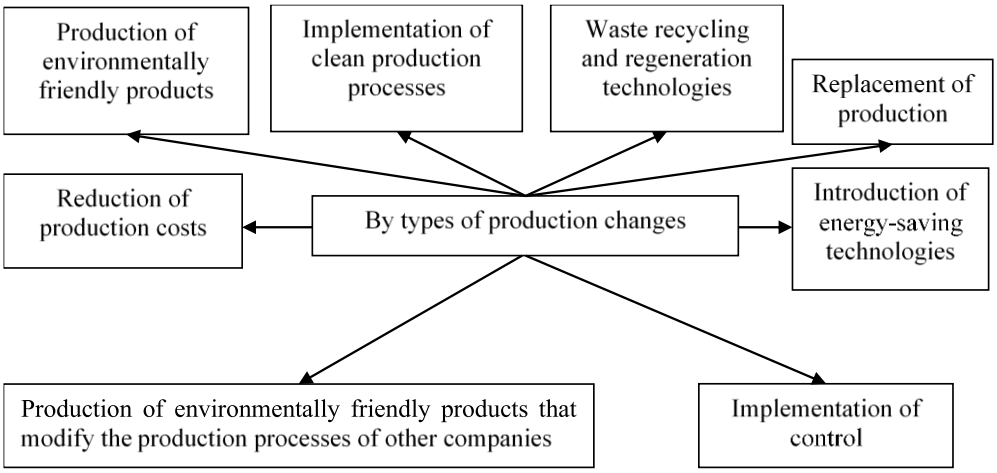

Figure 1. Criteria for evaluating the work of an environmentally friendly enterprise by type of production changes.

Here, each of the components of these evaluation criteria requires clarification:

(1) Production of environmentally friendly products. It includes consumer goods that have a minor impact on the environment during their consumption and residual disposal. The concept of environmentally friendly products can be used to identify food products and products from other industries.

(2) Implementation of clean production processes. High technologies determine the degree of competitiveness of individual enterprises and states in the global market.

(3) Waste recycling and regeneration technologies. Waste reduction is achieved after the processing of residues and by-products during the production cycle.

(4) Production replacement. It includes those developments that reduce the consumption of raw materials in production.

(5) Reduction of production costs. It includes innovations replacing materials that negatively affect the environment with safer ones.

(6) Introduction of energy-saving technologies. This type of technology is achieved by reducing energy consumption: during the production cycle or consumption of finished products.

(7) The production of environmentally friendly products that modify the production processes of other companies. This category includes products that have a positive impact on the environment during their use in other production processes.

The formation of the main fields for the creation of an environmentally friendly enterprise should be based on the following principles:

- The principle of environmental conditionality, that is the orientation of an environmentally friendly enterprise to maintain or enhance the sustainability of ecosystems. According to it, economic mechanisms should create conditions for stimulating entrepreneurs in the framework of making a profit by improving environmental results;
- The principle of economic expediency, which provides for encouraging the parts of an environmentally friendly enterprise to achieve environmental goals in the most effective ways;
- The principle of transparency implies openness and accessibility to society of all information about the activities of an environmentally friendly enterprise. This principle initiates the promotion of goods and services on the market, and enables consumers of different levels, starting with enterprises that pollute the environment and ending with ordinary people, to have complete information about the environmental quality of goods and services to take a final decision on the expediency of purchasing goods and services on the market;
- The principle of consistency considers the condition according to which economically advantageous zones of an environmentally friendly enterprise should cover the production and service life cycle (Dzhancharova et al., 2023; Loseva et al., 2017; Nikolskaya et al., 2018b).

According to different criteria, environmentally friendly enterprises can be classified as follows:

- By types of eco-destructive processes prevented through appropriate activities, such as landscape disturbance, mechanical pollution, biological pollution, chemical pollution, physical pollution (electromagnetic, radioactive, global, noise, and thermal);
- According to the components of the natural environment with which the activity is associated: basic (air, waste, water, noise) and complex (air–water, air–waste, air–water–noise);
- By type of activity: research, production;
- By types of technological processes: production of environmentally friendly products, introduction of environmentally friendly production processes, introduction of energy-saving technologies, production replacement, recycling and regeneration of waste, production of environmentally friendly products that modify the production processes of other companies.

The analysis of socioeconomic and environmental factors of the development of an environmentally friendly enterprise convinces us that targeted measures to form this type of activity can be effective only if the necessary prerequisites are created.

More important factors in creating such prerequisites include demand for products, works, and services used for environmental purposes.

The demand for the products by an environmentally friendly enterprise is formed in areas most susceptible to man-made pollution. These are most often industrial centers where most of the enterprises that pollute the environment are concentrated. However, these factors determine only efficiency. For the demand for environmental products to be formed, they must be perceived by the social system, since it ultimately forms the factors of sufficiency like the degree of awareness of the population about the danger of destructive consequences, the desire of the political leadership to change the situation, and the economic opportunities of society.

We formulated evidence that determines the level of need and interest in the products of an environmentally friendly enterprise. The integral indicator for characterizing a region or locality in terms of demand for environmentally acceptable products has the following form:

$$j = f\left(K_{poll.i,}K_{pop.,}K_{ec.pot.,}K_{s.p.}\right) \quad (3)$$

where $K_{poll.i}$ is the eco-destructive level (or the level of environmental stress) of a given territory according to the *I* type of polluted environment (air, water, land, noise, etc.); K_{pop} is the level of population concentration in the region; $K_{ec.pot}$ is the indicator reflecting the financial potential of a given locality; $K_{s.p}$ is the social indicators that affect the corresponding demand, for example, administrative pressure on pollutants, and social and informational events that were supposed to help increase awareness of the population and specialists working at the enterprises.

The demand for environmentally acceptable products is higher if the components that determine the level of the integral indicator are sufficiently significant. Thus, there are objective prerequisites for managing demand for environmentally oriented products.

If environment-polluting enterprises realize the importance of using raw and other materials and energy, then prerequisites will arise for the creation of companies that can offer them a way out of the situation, as a result of which the sector of environmentally friendly enterprises will gradually begin to be created.

The study of the supply of environmentally oriented goods is based on the following conditions and indicators: the presence of enterprises that can change their business profile by starting the production of environmentally friendly products; the availability of necessary raw materials and resources for the production of appropriate products; the possibility of waste recycling; the availability of technologies that allow the production of products of the required quality and quantity; the availability of tax benefits and state support in the form of subsidies and grants or credit support necessary for the initial formation of an environmentally friendly enterprise; availability of organizational conditions (availability of licenses, patents and permits); availability of alternatives for polluting enterprises within the framework of purchasing products of an environmentally friendly enterprise, paying high tariffs for environmental pollution or unlimited consumption of natural resources, own improvement of technologies and production. **Table 1** lists the main factors that influence an entrepreneur's decision to start working in the sector of environmentally friendly enterprises.

Table 1. Ranking the attractiveness of the economically friendly enterprise sector in terms of supply factors.

Constituent supply factors	Degree of importance of the indicator		
	high	average	low
Enterprises that do not have sufficient demand for all products	+		
Availability of personnel with the necessary qualifications		+	
Availability of raw materials		+	
Availability of technology			+
Acceptable tax climate	+		
Presence of large penalties for pollution		+	
Presence of strong competition among manufacturers of some kind of product		+	
State policy in the field of ecology, which is aimed at preventing pollution but not eliminating it	+		
Stabilization of the economy	+		

Infrastructure factors are also important, including the availability of electric grids, highways, ports, airports, urban communications, trade, and the financial sector that can ensure the development of an environmentally friendly enterprise. The infrastructure sphere is associated with the formation of most categories crucial in all economic relations, such as the cost of goods or services, all production costs, the final price of labor or services, and the amount of profit received.

Investment factors or the availability of free capital are necessary for the formation of companies and the introduction of environmentally friendly enterprises into production. Motivation factors or the formation of a system of positive and negative incentives can help the rapid formation and profitability of an environmentally friendly enterprise (Lebedev et al., 2018; Levanova et al., 2019; Nikolskaya et al., 2018a; Voskovskaya et al., 2022).

Efficiency factors play a special role here, determining the conditions for the development of an environmentally friendly enterprise in maximizing the integrated economic and environmental efficiency of the functioning of the national economy. It is also necessary to carry out a purposeful search for opportunities for the formation of efficiency factors, which requires scientifically based methods of accounting for the value of the integral economic efficiency of the implementation of the goals of an environmentally friendly enterprise.

The full economic efficiency for the national economy of an environmentally friendly enterprise ($E_{env.ent.}$) can be determined by the following formula:

$$E_{env.ent.} = \frac{E_{env} + E_{econ} + E_r + E_{soc}}{V}, \quad (4)$$

where $E_{env.ent.}$ is an environmental component that considers the direct and related effects of reducing the environmental consequences of environmental impact: reducing economic and environmental losses at previous stages of production and related economic and environmental effects associated with a possible reduction in the environmental burden at previous stages of extraction of material and energy resources in cases of their appropriate conservation; E_{econ} is the economic component of the effect: the direct profit of the activities of an environmentally friendly enterprise, the effect in related areas of economic activity due to the possibility of economic growth

in related parts of economic activity, and the effect of using resources that went to waste; E_r is the effect of replacing the resource base and the possibility of using released materials and energy under resource constraints the effect of increasing export potential; E_{soc} is the social component of the effect: the effect of increasing employment; the effect of income growth and solvency of the population; the effect associated with a decrease in the outflow of qualified labor resources outside the country, etc.; V are the total costs of developing the activities of an environmental enterprise in the conditions of the various cost components in a comparative form by the factor of time and place of their occurrence in the fields of production.

Introducing diagnostics and control of emissions into the environment includes technical changes and innovations that allow for systematic and qualitative control over the activities of all systems and processes. The introduction of additional or so-called "end of the pipe" technologies can also be considered. These technologies have long outlived their usefulness. However, it will take a long time until Russian enterprises stop using them to capture substances that pollute the natural environment at the end of the production cycle.

This classification system allows us to move on to solving the problem of methodological substantiation of the main fields and forms of development of the activities of an environmentally friendly enterprise. One of the most important and difficult tasks in managing the activities of an environmentally friendly enterprise is to create a system of adequate economic mechanisms and tools that allows one to translate the full effect of the national economy into factors beneficial to each economic entity that provide the necessary motivational basis.

To assess the efficiency of using the products of an environmentally friendly enterprise, one of the most important indicators can be considered, namely, the profitability (P) of environmental activities:

$$P = \frac{Pr_{net}}{C}, \quad (5)$$

Pr_{net} is the net profit that remains at the disposal of the enterprise; C is the cost of production.

Considering the numerator of Equation (5), it is possible to determine the possibility of this growth:

$$Pr_{net} = Pr_{ent} - T - (Pa_{res} + F), \quad (6)$$

where Pr_{ent} is the profit of the enterprise; T is the taxes that are paid to the state; Pa_{res} are the payments for the use of natural resources; F is the fines for excessive pollution or use of natural resources.

When the activities of an environmentally friendly enterprise contribute to improving the economic, social, and environmental indicators of other enterprises, it is necessary to use preferential taxation of this entity. It should consider the full effect of the activities of an environmentally friendly enterprise using the internationalization of externalities method, that is, the translation of external influences (positive and negative) into internal calculation indicators perceived by the financial system of the enterprise.

For example, a decrease in the amount of annual taxation (ΔT) can occur within the limits of the full or partial external effect of an environmental enterprise:

$$\Delta T \leq E_{ext.} \quad (7)$$

where E_{ext} is the external component of the effect for this enterprise.

The very form of tax change should not be individual (only for this economic entity) but also cover all homogeneous enterprises engaged in the same type of activity. Thus, it is advisable to apply the discussed theoretical approach and translate it into practical terms when converting tax rates as a percentage to a basic value based on a sufficient number of enterprises representing this area. When tax motivational tools are used, there is a real economic incentive for developing an environmentally friendly enterprise at the level of each business entity.

The main activities of an environmentally friendly enterprise include the manufacture, installation and operation of environmental protection (treatment) facilities; development of environmental technologies and devices; production of environmentally friendly products; management of the life cycle of goods; processing, transportation, and storage of waste, elimination of toxic waste; trade in environmental technologies, products, and waste; analytical and laboratory services; energy conservation and the use of alternative energy sources; conservation of land resources; water control; air control; environmental audit and environmental expertise; environmental lending and insurance; environmental advocacy and education; eco-tourism; environmental medicine and occupational safety; information technology.

Developing an environmentally friendly enterprise can be effective only with the help of all these factors. **Table 2** shows the expected priority level of environmental protection products in the Moscow region, Russia.

Table 2. The expected level of priority of products to ensure environmental safety in the main sectors of the national economy in the Moscow region.

Economic sector	**Types of environmental protection products to ensure environmental safety**						
	Clean products	**Energy-saving technologies**	**Clean production processes**	**Recycling**	**Monitoring of regulatory systems**	**Other technologies**	**Products that replace production processes**
Mechanical and metalworking production	+/–	++	++	++	–	+	+
Chemical	+++	+/–	+++	+	–	+/–	+
Iron and steel industry	–	++	++	+	–	+/–	+
Production of building materials	++	+++	+	++	–	+/–	–
Energy production	++	+++	+	+++	–	–	++
Transport	–	++	+++	–	–	–	–
Precise equipment	–	+	+++	++	++	+/–	++
Light industry	+++	+	+	+	–	+	–

Table 2. (*Continued*).

Economic sector	Types of environmental protection products to ensure environmental safety						
	Clean products	**Energy-saving technologies**	**Clean production processes**	**Recycling**	**Monitoring of regulatory systems**	**Other technologies**	**Products that replace production processes**
Food industry	+++	–	++	–	–	+	–
Wood processing industry	+++	–	+	+	–	–	+
Printing services	+++	–	++	++	–	–	–
Environmental services	++	++	+	++	++	+	++
Other production	++	+	+	++	+	+	+

Note: +++: Most technologies are expected to change in this direction; ++: A significant number of technologies are expected to change; +: A small number of technologies are expected to change; +/−: Technologies will develop in this direction, but not to a significant extent; −: This field of technology changes in the industry will not develop.

The volume of the potential market for the consumption of environmentally friendly enterprise products in the national and global markets was also assessed (**Table 3**).

Table 3. Clean technologies: The size of the potential market, %.

Type of environmental safety activities	Market type		
	regional	**national**	**global**
Clean products	20	30	50
Energy-saving technologies	10	30	60
Clean production processes	10	55	35
Recycling technologies	10	45	45
Other technologies	50	25	25
Products that replaced the production processes of other companies	10	40	50

The analysis shows that the most promising areas are the production of environmentally friendly products and processes in almost all sectors of the Russian national economy and the use of energy-saving technologies and recycling of secondary raw materials. The latter can be developed not only as an additional production but also as the main type of activity. This is due to the large amount of waste stored since the Soviet times and containing both valuable materials and strong pollutants.

The economic mechanism for stimulating and developing the activities of an environmentally friendly enterprise should solve two fundamental problems: Ensure the most efficient use of natural resources to meet the production and non-production needs and ensure the profitability of an environmentally friendly enterprise. In a normally and rhythmically functioning economy, the processes of resource conservation and the functioning of a dedicated environment of an environmentally friendly enterprise, along with the state, are regulated by competition.

Competition forces us to search for new ways to improve the quality, reliability, durability, and mobility of products, on the one hand, and reduce the costs of their

production and use, on the other. In Russia, the prospects for the development of environmentally friendly enterprises are primarily related to the stabilization of the economic system. Economic stabilization in this case allows one to increase the volume of financing of natural programs and create a stimulating and effective system of payments for pollution. This system should start working at state-owned enterprises and private structures.

If we talk about regional environmentally friendly enterprises, practically no plant or factory works without harm to the environment, although some business entities strive to work with minimal harm to the environment. Currently, some managers understand that it is impossible to work using the old methods. They do that not only because they want to improve the environmental situation, but simply because managers are pragmatic people and they understand well that if the level of environmental safety remains the same as today, then tomorrow their products will not be competitive on the global market.

When conducting tender processes, environmental friendliness is an indicator considered in the first place. When to produce environmentally friendly products and obtain high profits, it is necessary to produce environmentally friendly products at the request of consumers; use methods to eliminate the consequences of destructive effects on the environment; make products to support human immunity and wellness; use energy-saving technologies and equipment; recycle waste; protect the environment; and promote an energy-saving lifestyle. Environmentally friendly products are directly related to the category and the concept of quality. The latter determines the lifestyle, social, economic, and environmental basis for the successful development of society and people.

When man-made pressure on the environment increases, the scientific and methodological development of the territorial organization of potentially hazardous production becomes urgent. This includes the development of functional-spatial and complex natural-economic zoning, representing the territorial basis for environmental regulation of economic activity, and the development of interaction between the socio-economic, industrial-sectoral, territorial, technological, organizational, ethnodemographic, and natural-resource structure in various regional districts.

The result of the proposed recommendations is the coordination of all types of economic activity in the national system of the social division of labor. The territorial combination of production facilities of various industries and its impact on the environment require complex economic and environmental production management. The principle of scientific validity of the integrated approach achieves the coordination of economic development and environmental protection and the effectiveness of decisions in enterprises and industries.

The reason for the aggravation of economic and environmental problems as a result of the placement of potentially dangerous production is that when expanding production and placing productive forces, the vulnerability of natural ecosystems was not previously considered. Economic sectors developed based on extensive methods. Environmental safety requirements were considered in a simplified manner. The need to ensure safety and limit environmental risk was not considered either.

Technogenic and economic security is the targeted regulation of the interaction between economic activity and the environment. Environmental factors and natural

foundations are the core of social production. Environmental safety for the population has put the issue of its adequate reflection in construction projects for new production facilities.

The basis for a territorial organization's production modernization is constant spatial dynamic information about the nature and state of the environment and the level of economic activity. The purpose of the modernization of the territorial organization of potentially hazardous production is to establish compliance of new production facilities with the environmental protection and nature management requirements.

In potentially hazardous production, the technology for manufacturing products, transporting them, and processing their components and the operation of industrial equipment require a special security status for facilities and adjacent territories. We can highlight:

Regional and economic aspects of using the environment (the placement of productive forces, especially natural resources; economic and environmental factors that affect the spatial difference in the quality of the environment);

Regional and economic aspects of the environmental policy (territorial division of environmental strategies, the effectiveness of the environmental policy);

Economic and environmental aspects of the regional policy (regional and political strategies) and the creation of infrastructure for industrial growth centers in districts given an advantage in these matters and economic incentives for the expansion of innovation.

Absolute economic and environmental safety is unattainable; therefore, environmental risk should always be considered. It is one of the most important parameters in choosing survival strategies. In cases where the risk is low, the safety strategy is determined through the economic system of costs and benefits. There are several traditional factors for managing the risk to the population in industrial accidents. Risk management at the design stage minimizes the likelihood of accidents. Zoning of districts adjacent to potentially hazardous facilities allows determining the requirements for the design and construction of public industrial facilities. The degree of artificial and natural risk depends on the probability of an emergency, its consequences, and the availability of warning and protection means.

5. Conclusions

In modern economic conditions, product quality is crucial for the survival of enterprises and entire sectors of the Russian national economy. It gives manufacturers the following economic advantages: a good image in the market confirmed by conformity and environmental certificates; competitiveness of products in the Russian and global markets; better conditions for obtaining loans from banks and insurance companies, since the risks of bankruptcy and profits not fully received by organizations are significantly reduced; increased confidence from investors, authorities, and consumers; improved contacts with qualified partners; improving cost management; saving raw materials, energy, and other materials; simplifying the process of obtaining licenses and permits; differentiating prices for environmentally friendly and certified raw materials and products compared to other enterprises.

Currently, most enterprises operate in the trading sector, where a high return is combined with a small capital. In the manufacturing sector, the situation is more complicated because large investments are needed to produce competitive and modern products. Russian entrepreneurs often do not have such funds, and investors from other countries look at Russia apprehensively. If a sufficiently attractive sector is created, some enterprises will soon transfer shares of their capital to environmental services.

To do this, it is necessary to form an effective system of various levers and tools with which the state can create a market for environmentally friendly goods and services while maintaining and improving environmental and economic conditions. The emergence of new and even more environmentally friendly enterprises creates new jobs, and fruitful work gives earnings. Together they contribute to the state budget for further economic development.

Thus, the creation of an environmentally friendly enterprise's sphere of activity is not only a solution to many economic and environmental problems but also a way to transition to a normally functioning market system, given both the financial capabilities of enterprises and the understanding by company management and the population of the importance and necessity of sustainable state development. Future studies should consider economic mechanisms for regulating resource conservation processes at the regional level and analyze the location of potentially unsafe industries in the region from the point of view of environmental safety, the waste management system, and measures to ensure environmental safety.

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