Formation of factors for the selection of criteria for environmental friendliness of organic products based on the implementation of an integrated eco-strategy

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Abstract. In this article, we will reveal the opportunities, needs and features of the implementation of environmental strategies in order to motivate the environmental activities of commodity producers in the field of agricultural production. The problem of preserving the environment and ensuring food security in the existing ecological and economic conditions can be solved by achieving optimal environmental management and environmental protection. Improving the relationship between the environment and the economy requires the use of various regulatory tools. The vector of institutionalization of ecological and economic interests should be aimed at correcting certain mandatory actions between the participants of these relations. This includes the active development of approaches that include the integration and combination of information, legal, administrative, economic, moral and ethical tools for regulating nature management and environmental protection. The achievement of the ecological and economic optimum is possible through the analysis of the expected effect and the free conclusion of agreements (contracts) between the subjects of ecological and economic relations and the development of the institute of voluntary environmental agreements using the tools of game theory. The effectiveness of the implementation of integrated eco-strategies can be most clearly expressed in the agricultural sector as the need to produce high-quality agricultural products while maintaining the quality of the environment, especially soil fertility. The trend of consumer choice of organic products in the world continues, grows, determines the growth of the organic products segment and correlates with the goals of environmental policy. In Russia, some of the identified shortcomings and shortcomings of the institutional conditions constrain the growth rate of organic production, but the high potential of its production in the future can significantly change the export orientation of the agricultural sector, increase the competitiveness of domestic agricultural products and become one of the promising directions (vectors) of ecological and economic development of Russia. Organic organic standards is essential for the formation and improvement of institutional conditions of realization of ecostrategy, the main actors (players) which is the complex nature of national and ecostrategy explains the interest and willingness of participants to implement environmental-economic optimization of the activities of organic producers. Depending on the existing norms, rules and standards, the choice of actions of participants in voluntary environmental agreements is associated with individual expectations of maintaining high-quality environmental and economic benefits.
1. Introduction
Active development of combining information-ideological, legal, administrative, economic and ethical instruments of the environmental policy requires the activation of the information factor as one of the defining trends of the transition to a green economy (figure 1) and ecological-economic development in General [1]. The change in the raw material model of development in Russia corresponds to the goals of the transition to a "green" economy, which are included in the implementation of the Strategy of Scientific and Technological Development of the Russian Federation [2]. In the world, there is a growing need to increase the production of high-quality agricultural products. This is a stable trend that correlates with the goals of environmental policy at the global, national, regional and local levels.

![Figure 1. Trends in the transition to a "green" economy.](image)

The choice of environmental policy and environmental management tools by participants is determined by the possibility of achieving an ecological and economic optimum (the requirement for a transition to the ecology) at the lowest cost (the requirement of a market system) (table 1) [3].

**Table 1.** Tools of environmental management and environmental protection.

| Control mechanism | Economic substance                                                                                                                                                                                                                                                                                                                                 | The expected effect of                                                                                                                                                                                                                     |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Economic          | The use of economic instruments of a hard nature (fines, etc.), soft (payment for the negative impact on mandatory pension insurance) and stimulating (tax benefits, accelerated depreciation of environmental equipment, environmental insurance, etc.) nature.                                                                                     | High efficiency in terms of saving environmental costs with the ability to independently determine the environmental and economic strategy. They are sensitive to changes in the economic environment.                                          |
| Moral and ethical impact | They imply the development of the system of environmental education and the cult of social and environmental responsibility; the development of public-private partnership through the provision and distribution of subsidies from the Federal budget for environmental purposes; optimal behavior of participants depending on the achievement of the eco-efficiency indicator. | Savings the Federal budget at the expense of the prevented economic damage, including social. Attracting private investment in environmental business with the creation of jobs for the population. They enable businesses to reduce production costs, increase revenues, and expand their competitive position in the market. |
Non-traditional tools of nature management and environmental protection are innovative solutions to cross-sectoral and inter-territorial problems [1]. An example is the compromise solution of environmental and food problems. Non-competitive selection of applications in the business of micro-entrepreneurs and innovative tools is due to their ability to reduce production costs, increase revenue and increase competitiveness in the market (through the use of green technologies and organic cultivation of products with high added value that contribute to sustainable agricultural production) [3].

An important point in the management of natural resources and environmental protection is to take into account the views of various business communities and social groups. Taking into account preferences and clear positions of stakeholders in negotiations with government representatives helps to reduce the costs and anthropogenic burden of producers, which directly contributes to the emergence of the Institution of "voluntary environmental agreements" (VEA). The VEA is a variant of the cooperation agreement between environmental regulators and companies (companies) and is a form of public-private partnership. The undeniable advantage of the agreement is the possibility of combining economic entities into "new forces", and both political structures and business are beginning to realize their role as a kind of "player in the game" with different strategies for each participant [3].

For example, the prospects of Russia in the market of organic products are obvious. Today, according to the calculations of the National Organic Union of the Russian Federation, 1 million hectares of agricultural land gives an average of 1 billion organic products in the world. 300 thousand euros per year. It is easy to calculate that with the introduction of 12 million hectares into circulation, Russia will be able to get about 16 billion organic products. euro [4]. And this is taking into account the environmental advantages in the production of organic products. The need to increase the production of high-quality agricultural products in the world is growing. A compromise in solving environmental and food problems is to increase the productivity and fertility of soil and land resources. According to the type of reproduction of natural fertility, it is possible to accurately determine the degree of stability of the state and further development of agricultural production and its ecological and economic efficiency. As experience shows, attempts to compensate for the containment of natural fertility by the growth of artificially created ones have a low effect. In order to improve the qualitative characteristics of economic fertility, investing in natural and artificial fertility has clear time criteria. In the opposite case, it is impossible to solve the problem of food security.

According to Federal Law № 280-FZ of 03.08.2018 "On Organic Products and on Amendments to Certain Legislative Acts of the Russian Federation", which entered into force on January 1, 2020, organic products are environmentally friendly agricultural products, raw materials and food, the production of which meets the requirements of this Federal Law [5]. And here, producers of "clean" agricultural products will face the emergence of new standards for eco-products, which will provide for its division into "organic", "ecological" and "green" products. These labels will mislead consumers, as they do not allow us to fully determine the difference between the concepts of "organic", "eco -" and "bio -" products. Organic-products will be subject to the highest requirements, unlike eco-and bio-products. This is also a reduction in the use cases in the production of fertilizers and veterinary drugs; prohibition of the use of genetically modified ingredients, plant protection products, and soil improvement substances; the possibility of producing products only away from sources of environmental pollution and industrial facilities; the use of mainly manual labor, etc. The concept of "ecological "products is much broader than "organic". In fact, there is a tendency to reduce the concept of "organic" products to the concept of "ecological". The cost of "organic" products is higher than in traditional types of agricultural production. If the domestic consumer prefers "ecological" products, then some Russian producers of organic products may lose sales markets both at the local and regional levels.

Russian producers of organic products certified according to the Russian national standard GOST 33980-2016, already working on certain "green" technologies, will be forced to adapt again to new standards.
Moreover, the criteria for classifying products as "ecological" or "organic" should be generally accepted not only in Russia, but also abroad. In developing countries, the ISO 14000 system of standards (specifically ISO 14024) is used as a basis. It allows you to develop a product life cycle that includes an important environmental aspect and a criterion for environmental friendliness.

Thus, the Russian law "On Environmentally Friendly products, Raw Materials and Food" should be based on a mechanism that allows:

- Compare environmental criteria for the same type of products at the same stages of the product life cycle;
- Determine the environmental aspects and the degree of their impact on the efficiency of production and the effectiveness of environmental policy;
- Take into account the degree of scientific justification and the perception of environmental criteria by end users.

Based on this mechanism, it is possible to recognize at the national level the existing integrated eco-standards (Global G. A. P, foodalliancecertification), aspect eco-standards (for groups of homogeneous products, for the protection of animal health and for monitoring and improving soil conditions, "antibioticfree", for waste processing, etc.). The control system should be implemented through the process certification procedure and through laboratory control. Gradually increasing the requirements of standards, it is possible to increase the level of responsibility of manufacturers for the environment.

In the EU countries, a single environmental marking based on the ISO 14000 system of standards ("euroflowers") is used quite widely, including in Russia. Of the 94 Russian producers of organic products as of August 1, 2020: 30 have a Russian certificate, 76 – a European one (80% of them work only in the Russian market), and 12 of them have both a Russian certificate and a European one [4].

In addition, many Russian companies this year extended their European certificates and did not switch to domestic ones. This was largely due to the Covid - 19 pandemic, which froze the certification system for almost three months in the season itself, the imperfection of the new Federal law regulating these issues and the lack of necessary by-laws (for example, GOST on wild-growing useful plants (wild plants) [6].

The Russian certification system also needs to be improved – none of the Russian certifiers has accreditation for certification of the production of biological products, organic aquaculture products, and currently there is no standard for wild plants [6].

The shares of Russian organic producers by type of activity as of 1.08.2020 are shown in (figure 2) [7].

![Figure 2. Russian organic producers by type of activity as of 1.08.2020.](image)

Thus, for Russia with its potential in the market of organic products, it is necessary to create opportunities to support the environmental activity of business in traditional industries.
The most promising areas of development of the Russian potential in the market of organic products are:

- Additional opportunities for the development of Russian exports – its excellent opportunities and experience in growing flax and hemp;
- Development of enterprises that would be engaged in organic aquaculture;
- Wheat export growth potential remains due to the use of organic technologies;
- The export potential of "green" products for Russia is represented by wild mushrooms, berries, nuts, herbs. According to the Federal Forestry Agency, the total mushroom-producing area in Russia is 81.8 million hectares, the biological reserve is 4.3 million tons, but no more than 6% of these reserves are used. In Russia, slightly more than 130 thousand hectares of forests are certified for export of organic wild plants (47th place in the world in this indicator) [8]. In the context of growing demand for wild plants, this is a real niche that Russia can occupy in the world market with a competent economic approach [9];
- Poultry meat, vegetable oil, and alcohol also have a high export potential.

Based on the basic eco-strategies (figure 3), the components of which are integrated, it is possible to come quite close to solving the problems of supporting the environmental activity of business and ecological and economic optimization of the activities of organic producers. In particular, to explain the peculiarities of the behavior of participants in voluntary environmental agreements, depending on the existing norms, rules, criteria and the need for interaction with various social institutions.

Figure 3. Basic eco-business strategies*.*(Compiled by the authors).
When improving the organizational and economic mechanism of environmental management, this is the optimal structure for combining the tools of current and prospective environmental regulation of business participants. Table 2 presents a tree-like information model of the impact of the use of eco-strategies on the environmental and economic efficiency of doing business.

**Table 2.** Qualitative impact of the application of eco-strategies on the environmental and economic efficiency of doing business.

| Performance indicators and criteria | Basic strategy | | |
|-----------------------------------|---------------|---|---|---|---|
| | sufficiency | cleaner production | circularitas | eco-efficiencies | cooperation |
| The economic damage from the negative effects | ↓ | ↓ | ↓ | ↓ | ↓ |
| Ensuring product quality guarantees | +↑ | +↑↑ | +↑ | +↑ | +↑↑ |
| Income from the operation of carrying capacity | +↑ | +↑ | +↑↑ | +↑ | +↑ |
| Need for government intervention | ↔ | ↔ | ↑ | ↔ | ↑ |

Note: ↔ – ambiguity of influence; + ↑ – slight increase; – ↓ - slight decrease; + ↑↑ - significant increase; - ↓↓- significant reduction; ↑ - need for availability.

*(Compiled by the authors).

In this context, the solution of the game between two VEA participants—the state and business, can be presented in the form of a table with conditional data (table 3) [10]. Individual expectations of maintaining a high-quality environment and economic benefits are evidence of the willingness of businesses to participate in VEA, despite the economic and financial risks associated with project implementation.

**Table 3.** Matrix of opportunities for institutional selection of participants in voluntary environmental agreements, taking into account environmental criteria for the same type of products at the same stages of the product life cycle*.

| Basic factor | Business expectation (with integrated eco-strategy)* |
|-------------|--------------------------------------------------|
| The state's expectations | Individual economic benefits (products with minimal eco-characteristics) | Individual economic benefits (products with average eco-characteristics) | Individual economic benefits (meeting the maximum requirements of the state and society) |
| Improving food security | 3.1 | 3.8 | 6.2 |
| The increase in exports at the expense of organic products | 4.2 | 4.3 | 6.8 |
| Improving the life of the population (including reducing diseases) and labor productivity | 2.3 | 2.8 | 4.2 |
| The reduction of anthropogenic load | 2.1 | 2.6 | 4.5 |
| Increase in assimilation capacity | 1.8 | 2.1 | 4.6 |

*(Compiled by the authors).
In the presented matrix, the institutional choice of participants in voluntary environmental agreements can be identified in (figure 4).

**Figure 4.** Institutional choice of participants in voluntary environmental agreements.

The institutional choice of VEA participants allows us to identify institutions that can reduce transaction costs and risks and make such agreements less uncertain. Effective development of VEA in the form of public-private partnership requires an adequate and stable regulatory framework at the federal and regional levels without substituting concepts based on environmental criteria [3]. Deficiencies in the institutional environment of functioning of Institute of foreign economic activity are lack of economic evaluation of the potential of natural resources and damage from the negative impact on the environment, a clear distinction social and environmental damage, "unwillingness to pay" for part of the population.; the unavailability of environmental information and poor quality of environmental education.

Conclusions. Current trends in the implementation of environmental policy require the use of appropriate tools for regulating environmental management, contributing both to the achievement of state goals in the field of environmental protection and the implementation of individual decisions of economic entities. In addition to standard management and market-oriented tools that create opportunities for entrepreneurial environmental activities, the use of non-traditional tools based on the basic principles of strategic environmental and economic activities is considered.

Creating conditions for increasing the production of high-quality agricultural products is the basis for solving environmental and food problems. One of the key areas of its solution is to increase the productivity and fertility of soils and land resources. Attempts to compensate for the containment of natural fertility by the growth of artificial ones give a low, and often the opposite effect. Investments in natural and artificial fertility have clear time criteria. At the stage of the new technological order, modern agricultural production has become more knowledge-based, and today we respond to environmental problems with the help of effective and comprehensive solutions that meet the principles of implementing the green growth strategy.

Following an analysis of the key instruments of management of ecologo-economic relations taking into account modern trends of development of "green economy", the authors summarize that the participants choosing environmental policy instruments is determined by the possibilities to achieve environmental and economic optimum (the requirements of the transition to a green economy) with the lowest cost (requirements of the market system). The authors consider organic agriculture as the basis and perspective for the development of crop-growing branches of agricultural production.
In environmental economics, many indicators and criteria are used under conditions of risk and uncertainty, and using their values, it is possible to assess the effectiveness of the proposed tools at different levels of the economy. The authors suggest ways to improve the institutional environment for the functioning of the organic production sector, allowing Russia to enter new markets for products with added environmental value, as well as to make organic production accessible to domestic consumers.

The most effective regulatory tools include the introduction of the best available technologies and the expansion of "green" research facilities (based on public-private partnership laboratories), special pricing for organic products and economic incentives for the implementation of "green" corporate development programs. The application of scientific and technical tools for solving "big problems" includes the transformation of "food security" from ensuring food accessibility to ensuring the sustainability of agricultural production to the production of food with the best quality characteristics for improving human life and health and preserving the natural environment.

The proposed version of the cooperation agreement environmental regulators and enterprises (companies) (VEA) is a form of public-private partnerships, and identified a failure in the formation of the institutional environment complicates the balance in the game traders, confuses stakeholders and reduces the overall profit from the agreement. Nevertheless, the authors believe that the optimal solution of the game (according to the matrix of opportunities) is mutually beneficial cooperation between business and the state, confirming individual expectations for maintaining a high-quality environment and achieving environmental and economic optimization. The impact of the use of environmental strategy tools on improving environmental and economic efficiency can be attributed to environmental-oriented competition in the development of agriculture, taking into account environmentally friendly standards of organic products.

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