Investment development of agroindustrial complex based on the demands of environmental safety

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Abstract The article proves the need to develop innovative approaches to the economic relations organization related to investment, as the requirements of environmental safety change. The authors conducted the research of the agroindustrial complex development in Russia, taking into account environmental requirements. The dynamics and structure of investments in fixed capital for environmental protection and rational use of natural resources are analysed. Special attention is devoted to the state financing of investment projects aimed at ensuring environmental safety in agroindustrial complex of Russia. Measures to take into account environmental requirements in the development of investment projects by agricultural enterprises of Russia are proposed.

1. Introduction

Full recovery of the agricultural organizations needs in investment resources involves continuous improvement of methods and methods of investment process management. It seems obvious economic activity of agricultural enterprises taking into account the environmental approach.

In the agricultural sector identified a number of areas:

- the branches providing an agroindustrial complex with production goods, and also engaged in production and technical service of agriculture;
- enterprises and organizations directly involved in the production of agricultural products;
- the enterprises providing primary completion of agricultural raw materials, its preparation and storage, and also secondary processing of raw materials and finishing it to readiness for realization to the population.

Special focus in the development of criteria and threshold requirements of indicators for assessing the environmental safety of agroindustrial complex should be devote the second area, as the results of financial and economic activity of these business entities depends on the position of the Russian Federation both global and domestic food market, which affects the standard of living of the population. According to V N Ovchinnikov, N P Ketova and A A Lysohenko this is because of the efficiency of social production, the level and differentiation of the population income, the preservation of environmentally friendly natural environment as a condition of valeological food safety and the favorable noosphere of human activity [1].

By A A Afinogentova, M N Dudin and others, the technique of an estimation of quality of activity of enterprises of agroindustrial complex on the basis of ecologically responsible approach, in which it...
is noted that the emphasis in the activities of agricultural enterprises must be done not just for economic efficiency but also on environmental ethics [2].

The issue of environmental safety has recently been considered with increased attention not only in foreign countries, but also in Russia. In the field of intensification of the production process sharply raises the question about the environmental safety of the country, as evidenced by the research of M K Kamilova, P D Kamilova, Z M Kamilova [3]. In recent years, in connection with the accession to the World Trade Organization, more and more attention of investors is attracted by enterprises aimed at the development of production taking into account the requirements of environmental safety, so the relevance of the research topic is indisputable.

2. Materials and methods
Existing criteria for the investment projects evaluation, based on a comparison of their economic efficiency, allowing to fully quantify the projects taking into account the possible projects environmental consequences. Existing official documents, which are guided by the financing organizations, with respect to the accounting of environmental characteristics, which provide an objective comparison of projects that, have a positive impact on the environment, as well as causing damage to it within the limits permitted by regulations.

3. Research study of investments taking into account environmental safety
A comprehensive description of the investment project is given on the basis of information received and processed at the pre-investment stage. At the same stage, a number of studies are being carried out and preparations are being made for the start of the project. Detail of investigations varies depending on the requirements of the initiator and the investor, the funding possibilities, the time allocated for their implementation, and the sole owner's classification according to the degree of impact on the environment. It is customary to distinguish three levels of pre-investment research [4]:

- a feasibility study of the sole owner implementation;
- pre-project studies;
- preparation of investment Justification.

The difference between the levels of pre-investment research is rather conditional. However, regardless of the investment size and the type of project, the initiator must provide some information and prepare the necessary documents. It is also an important fact of unconditional study of all sole owner issues, as it largely determines the success or failure of the project as a whole [5].

The possibilities research of the investment project is associated with the formation of the concept and objectives of the project. An insufficiently or incorrectly formed concept of sole owner (especially in terms of its environmental provision) can create serious difficulties in its further promotion in the system of preparation and decision-making, regardless of how successfully all subsequent actions will be taken. The concept of the investment project should show both aspects of the project - financial - organizational and environmental.

Forming the concept of the project, the initiator should strive to show:

- the history of the development of ideas project implementation;
- impact of the project on improving the quality of the environment on the territory of its implementation;
- technological aspects of investment activity;
- equipment purchased under the project, its environmental characteristics;
- the initiator's desire to contribute to the environmental problems solution of the project, national or global environmental problems, etc.

Agriculture is a source of wealth, as well as a recipient of negative impacts on the environment. Implementation of investment projects in agroindustrial complex on investment (construction, etc.) and operational phases can also be a source of environmental problems, adversely affecting both the environment as a whole and the quality of production and the landscape of the regions. The
implementation of such projects does not ensure sustainable development of the industry and does not contribute to the conservation of nature.

Figures 1 and 2 show the schemes of investment projects developed without full consideration and taking into account environmental requirements in the agroindustrial complex system.

**Figure 1.** Scheme of the investment project prepared without full consideration of environmental requirements in the agro-industrial complex.

**Figure 2.** Scheme of the investment project prepared without full consideration of environmental requirements in the agro-industrial complex.

In modern conditions, one of the promising directions of agriculture development can be considered ecological (biological, organic or alternative) agriculture and the introduction of waste-free technologies (for example, the use of plants for processing organic matter into biogas and environmentally friendly fertilizers; technologies for the operation of long-term cultural pastures, processing and utilization of manure). The main positive aspects of the use of waste-free technologies and organic agriculture are:

- significant reduction of the impact of agricultural production on the environment;
- reduction of the need for non-renewable resources used in the production process (fuel, fertilizers, etc.);
- insurance of the sustainability of agriculture to changes in the external environment.

Evaluation of the project of waste-free technologies implementation taking into account environmental impacts, on the example of the project of processing and utilization of manure in the
agricultural enterprises of the Lipetsk region shows that such accounting significantly affects the financial performance indicators are used by funding organizations when making decisions on the allocation of credit resources for the implementation of projects. However, the participants of the forum “Ecoregion” came to the conclusion that without the state support of the enterprise for the environment will not tackle the problem. Processing of agricultural waste is very expensive. At the same time farmers themselves recognize: Lipetsk experience, when high quality fertilizers are obtained from waste, needs to be implemented. Including at the legislative level. In useful fertilizer - compost - manure turns not for a year, and only for 3-4 months. Try aerobic bacteria. They recycle manure just by eating it. Helps miracle-machine. It was invented by the American Urbanzyuk. The American inventor called it "Scarab", that is a dung chafer. Such seemingly mundane matter requires capital investment. "Scarab" costs nearly 15 million.

Environmental policy requires special measures from the state, as well as huge funds intended for the preservation and restoration of soil fertility of agricultural land and agricultural landscapes at the expense of the budgets of the subjects of the Federation and agricultural producers.

Table 1. Investments in fixed assets aimed at environmental protection and rational use of natural resources

| Indicators/period                        | Million of rubles (in actual prices) | 2005. | 2010. | 2014. | 2015. | 2016. | 2017. |
|-----------------------------------------|--------------------------------------|-------|-------|-------|-------|-------|-------|
| Investments in fixed capital - constantly |                                      | 58738 | 89094 | 158636| 151788| 139677| 154042|
| including on:                          |                                      |       |       |       |       |       |       |
| protection and rational water management |                                      | 26143 | 46025 | 76315 | 78962 | 67469 | 66496 |
| atmospheric air protection               |                                      | 19839 | 26127 | 55587 | 40120 | 40340 | 60199 |
| protection and rational land use         |                                      | 9206  | 9340  | 14540 | 15703 | 12228 | 10216 |
| of them on land reclamation              |                                      | 2041  | 2782  | 4238  | 5671  | 3865  | 3917  |
| environmental protection from pollution  |                                      | 2988  | 6276  | 7684  | 12732 | 8423  | 10942 |
| by waste production and consumption      |                                      | 562   | 1326  | 4510  | 4271  | 11217 | 6189  |

| Percentage of the previous year (in comparable prices) | 2005. | 2010. | 2014. | 2015. | 2016. | 2017. |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|
| Investments in fixed capital - constantly               | 124.8 | 100.7 | 122.5 | 86.0  | 86.6  | 106.3 |
| including on:                                          |       |       |       |       |       |       |
| protection and rational water management               | 145.2 | 108.7 | 122.5 | 93.0  | 80.4  | 95.0  |
| atmospheric air protection                               | 111.8 | 104.1 | 128.9 | 64.9  | 94.6  | 143.9 |
| protection and rational land use                        | 144.7 | 78.3  | 100.6 | 97.1  | 73.3  | 80.6  |
| of them on land reclamation                              | 143.0 | 105.4 | 109.9 | 120.3 | 64.1  | 97.7  |
| environmental protection from pollution by waste        | 72.9  | 82.0  | 98.1  | 149.0 | 62.2  | 125.3 |
| production and consumption                              | 65.4  | 93.3  | 236.8 | 85.2  | 247.0 | 53.2  |

The table 1 [6] shows that investments for environmental protection and rational use of natural resources in 2017 in Russia has reached 154,042 billion.
The legislation in force in Russian Federation allows not only to carry out an environmental impact assessment in order to identify unacceptable impacts of projects on the environment, but also to measure the degree of damage or to assess the positive impact. At the same time, the documents that follow banks and administrative authorities in making decisions on the financing of certain projects require only a positive conclusion of environmental expertise. As a result, projects with a positive impact on the environment do not get an advantage over projects with negative (within acceptable limits) environmental consequences.

Experts in the field of environmental impact assessment of investment projects offer different ways to take these impacts into account when making investment decisions. For agricultural production conditions, the most promising approach is the direct inclusion in the cash flows of the project of values characterizing the damage caused by the project to the environment, or its positive effects.

**Table 2. Investments in fixed assets in environmental protection and rational use of natural resources, according to sources of financing in 2017, million of roubles.**

| Investment constantly | Using the funds of: |  |
|-----------------------|---------------------|---------------------|
|                       | federal budget      | subjects in Russian Federation and local budgets of |
|                       | own funds of enterprises | another sources |
| Constantly            | 154042              | 6749                | 9758                | 133242              | 4293                |
| among them for:       |                     |                     |                     |                     |                     |
| protection and rational water management |                     |                     |                     |                     |                     |
| atmospheric air protection and rational land use | 66496              | 3717                | 7774                | 51196              | 3810                |
|                      | 60199              | 117                | 0.4                | 60032              | 49.6                |
|                      | 10216              | 2197                | 981                | 7018              | 20                 |

Based upon the table 2, the main cost loading in investments to fixed assets aimed at environmental protection and rational use of natural resources was on enterprises in 2017. Including the agricultural sector. Thus, 133242 million rubles or 86.5% of the total investment was paid at the expense of own funds enterprises.

In these conditions the state plays a key role in attracting investment in agriculture. Only it can create incentives and conditions for the financing flow to this industry. These incentives and conditions include:

- Direct public investment in agriculture;
- Economic preferences by the state to agricultural producers (subsidies, tax benefits, etc.);
- Comprehensive measures to support agricultural producers, fixed in long-term strategies and programs for the industry development.

For example, in the Decree of the Government of the Russian Federation of July 14, 2012 № 717 "On the State program of development of agriculture and regulation of markets of agricultural products, raw materials and food for 2013 - 2020" were highlighted the tasks:
- ensuring food security of Russian Federation taking into account the economic and territorial availability of agricultural products;
- achievement of the value of the produced added value created in agriculture in 2020 in the amount of 3890 - 4050 billion rubles;
- increase in the exports growth rate of agricultural products;
- the index increase of physical volume of investments in agriculture fixed capital, as well as some other tasks presented in the government resolution [7].

To achieve these aims is provided not only the state, but also extrabudgetary funding. From the analysis of the financing sources of the above-mentioned State program it follows that by the end of 2020 the volume of extrabudgetary funding should form 9.7 billion rubles (table. 3). Attracting extrabudgetary funding is also more related to the creation of appropriate conditions by the state.

**Table 3.** Parameters of the State program financial support

| Parameters of the State program financial support | 2018, thousand rubles. | 2020 (by the end of the program), thousand rubles. |
|--------------------------------------------------|------------------------|-----------------------------------------------|
| The volume of the Federal budget appropriations  | 241 986 150.6          | 242 448 163.2                                  |
| Amount of appropriations of the consolidated budgets of the Russian Federation constituent entities | 44 965 748.0          | 41 522 605.7                                  |
| Level of non-budgetary sources                   | 11 365 663.5           | 9 784 440.7                                   |

The subsidy for providing a discount on the purchase of agricultural machinery by farmers in 2019 will be 16 billion rubles. The discount mechanism has been working for the last five years. The discount last year was 10% of the price of agricultural machinery, in 2019 its size is 20%. Last year, from August 15 to December 15, 2018, by the decision of the government, the discount was increased by 10 p. p. to speed up the renewal of the agricultural machinery park and additionally load the production facilities.

Discounts are provided to farmers for the purchase of domestic equipment in the framework of the government decree N1432, approved on December 27, 2012. In 2016 to compensate for the discounts to agricultural machinery manufacturing sector from the budget was provided to 11 billion rubles. In 2017, this volume increased to 13.7 billion rubles, the money were ended in mid-summer, after which another 2 billion rubles was sent from the reserve Fund of the government. In 2018, 10 billion rubles were provided for discounts in the budget, this year — 8 billion roubles.

4. Conclusion

1. Regularly the requirements use of environmental safety in the assessment of the effectiveness of investment projects and the development of business plans for investment projects for financing organizations, including Rosselkhozbank, since the relevant calculations do not contradict the current guidance materials.
2. Make additions to the existing recommendations on the business plans development for investment projects for agribusiness enterprises, as well as guidance on the evaluation and selection of investment projects by administrative authority and funding organizations, providing a real reflection in the economic indicators of environmental impacts of investment projects in accordance with the requirements of current legislation on environmental protection.

References

[1] Lysochenko A A, Ovchinnikov V N, Ketova N P 2014 Ecologization of agricultural nature management - imperative of ensuring food security J. of Economic Regulation. 5(2)
[2] Anfinogentova A A, Dudin M N, Lyasnikov N V, Protsenko O D 2017 Methodology for assessing the quality of agricultural enterprises on the basis of environmental responsible approach. Economics of the region. 13(2) 579–590

[3] Kamilov M K, Kamilova P D, Kamilov Z M 2017 Ecological problems in agriculture as a result of intensification of development of agro-industrial complex of Russia Economy And National Economy Management 1(75)

[4] 1993 Commercial evaluation of investment projects. The main provisions of the method 76.

[5] Averchenkov A A, Maksimenko Yu L 2000 Environmental assessment of investment projects (Publishing house "NUMC state ecological Committee of Russia") pp. 109–132

[6] gks.ru"wps/wcm/connect/rosstat_main...environment.

[7] 2012 Resolution of the Government of the Russian Federation of July 14 No. 717 "On the State program of development of agriculture and regulation of markets of agricultural products, raw materials and food for 2013-2020"

[8] Kulagina N Ah 2011 Agribusiness development strategy to ensure its economic security Topical Issues of Economics and Management: Proceedings of the International. Science. Conf. (Moscow) vol I 33–36

[9] Koneva I I 2016 Investment development of agriculture of Ukraine Bulletin of the Belarusian state agricultural Academy. 2

[10] Zvyagintsev O S, Benatov Y G, Zaporozhets E N 2015 Managing greening agricultural business Scientific journal of the Kuban' state agrarian University – Scientific J. of KubSAU 114