Problems and prospects for sustainable development of the Russian agro-industrial sector under international sanctions and green agenda

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Abstract. Ensuring the productive functioning of the sphere of agriculture in modern economic conditions objectively requires a large-scale and fundamental reform of the business model of agriculture, based on the transition from resource (extensive) to innovation-oriented (intensive) paradigm, based on the active use of digital technologies in the organization, monitoring and management of agribusiness. Currently, agriculture in Russia does face a number of risks that significantly complicate the implementation of the program of digital agribusiness reform: the emergence of a shortage of seed material; lack of educational programs in the field of cooperation between agribusiness and IT; lack of dissemination of ideas and requirements of responsible business policy, expressed in the adoption and compliance with ESG principles; critical dependence of Russian agriculture on import of feed supplements and vaccines aimed at the implementation of genetic development. Despite the multitude of threats, thanks to competent and far-sighted leadership a set of measures has been taken to replace imports and develop our own production base, which today has already sufficiently revealed its potential to keep Russia the last word in the duel for the future food security of the entire Eurasian continent.

1 Introduction

Ensuring the productive functioning of the sphere of agriculture in modern economic conditions objectively requires a large-scale and fundamental reform of the business model of agriculture, based on the transition from resource (extensive) to innovation-oriented (intensive) paradigm, based on the active use of digital technologies in the organization, monitoring and management of agribusiness. The importance of implementing a systemic, holistic and complete revision of approaches to agriculture is argued by the following factors:

1) the internal environment of agroindustrial complex has a complex and non-linear structure

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2 Identification of challenges and threats of international sanctions in the agro-industrial complex: critical review and statistics

De-jure, the countries of the collective West did not impose sanctions against the agro-industrial complex, which is actively declared in the information space, but in modern society there cannot be a completely independent industry, and agro-industrial enterprises also experience an indirect, but still destructive influence from the imposed restrictions. Business experts in the field of international sanctions and those responsible for the development of import substitution policy (especially such personalities as D.V. Manturov, D.N. Patrushev, M.G. Reshetnikov) have no common point of view on the composition of risks generated by challenges and threats to the international economic space. In the framework of the scientific research the emphasis will be made on critical areas, on which the sustainable and productive functioning of the sphere of agroindustrial complex in the VUCA world depends.

The first step of the scientific research is the identification of current challenges and threats to the sustainable development of the Russian agro-industrial complex in the fairway of the digital economy and the increasing influence of green economy policy from the leading countries of the collective West: USA, UK, Germany, France, etc:

1) sanctions in the sphere of scientific and technological cooperation: limitation/prohibition of the supply of high-tech equipment, machinery and tooling; limitation/prohibition of technology transfer for the group of information and computer control unit, which leads to deterioration of technological and cybersecurity of business processes, increased costs of purchasing the necessary equipment (machines) to bypass sanctions, use of unlicensed (uncertified) equipment at the expense of quality and consumer safety;

2) sanctions in the sphere of inter-firm cooperation and agrotech: restriction/banned cooperation of leading venture funds and startup projects with the Russian agribusiness sector; freezing of existing agribusiness venture projects; blocking operations to attract investment in agribusiness startup projects, which leads to the inability of the agribusiness sector to directly participate in attracting venture funding and buying innovative agribusiness solutions; blocking access to the library of technical solutions developed by specialized agribusiness venture funds and food security

3) sanctions in the sphere of international finance and settlement: blocking international payments for the supply of agricultural products, freezing settlement accounts in foreign banks, blocking operational payments related to the acquisition of equipment and technology, a ban on loans (forfeiting financing) to foreign banks for investment purposes; blocking investment transactions with derivative securities (futures, forwards) for the supply of agricultural products through commodity exchanges, which leads to a violation of the financial cycle [1–3].

The dynamics of sanctions and the structural composition are shown in Table 1.

As follows from the dynamics of sanctions against the Russian agro-industrial complex presented in the table, there is an emphasis on striking through the technological aspect of its functioning by weakening its economic potential and reducing the productivity of its functioning (Figure 1).
Table 1. The dynamics of sanctions and their structural composition in 2016–2022.

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<td>Freezing of investment projects</td>
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<td>Breakage of trade contracts for the supply of agricultural products</td>
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<td>The group of technological sanctions</td>
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<td>Ban on the supply of machinery, equipment and their services</td>
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<td>Freezing of contracts on technology transfer</td>
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<td>13</td>
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<td>A freeze on the exchange of information and geotechnical data</td>
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Source: Innovative development of the agroindustrial complex in Russia.
Currently, agriculture in Russia does face a number of risks that significantly complicate the implementation of the digital agribusiness reform program:

1. The emergence of seed deficit - the Russian agro-industrial complex is characterized by maintaining the level of import dependence on seed material over 50.0% for all major types of crop production (according to the requirements of the Food Security Doctrine of the Russian Federation, the level of self-sufficiency in seed material should reach 75.0% by 2025). The only crop not dependent on external supplies is wheat, where the share of Russian seeds reaches 97%. The Ministry of Agriculture currently predominantly uses the “stick method”, reducing quotas on imports of foreign seeds, while more active support for domestic seed producers is required through the provision of tax benefits and other regulatory preferences, simplification of the originator certification procedure as well as the formation of a transparent royalty payment mechanism in favor of breeding companies - this would make the market competitive and active [4–6] (Figure 2).

2. Technological dependence of agritech on imports, %
3. Business activity of venture capitalists in the agritech sphere in relation to the previous period, %
4. Share of projects frozen / suspended due to sanctions, %
5. Innovative activity of agribusinesses, % (average)
6. Proportion of agribusiness organizations implementing technological innovation, % (average)
Fig. 2. Dynamics of imports of seeds of major crops for the period from 2015 to 2021, in %.


Lack of educational programs in the sphere of agroindustry and IT cooperation - according to 2020 data, there were 20 agrarian universities in the Russian Federation training specialists with cross-disciplinary competencies in agronomy and IT, which does not allow to fully cover the market demand for such specialists. The problem can be solved by involving private educational platforms, schools, as well as corporate R&D centers of IT competence development in the educational processes. An information background aimed at popularizing cooperation between the ICT sphere and the agro-industrial complex is important, as well as additional economic incentives for businesses to work in the agrotechno-segment (for example, admission to participation in state orders) [5; 6].

Insufficient dissemination of ideas and requirements of responsible business policy, expressed in the adoption of and compliance with ESG-principles - taking into account the export potential of agriculture and its significant role in foreign trade in Russia, the incorporation of "green economy" ideas by the regulator represented by the Ministry of Agriculture and industry associations (for example, the Union of Russian livestock producers, the Planting Material Manufacturers Association, Rusprodsoyuz) is currently going rather spotty and associated almost entirely with the preservation of markets of presence, i.e. ends. While the system rethinking of business models of agriculture does not occur, and this limits the transition to a new paradigm of agribusiness management, based precisely on digital technology and the most sparing use of natural and biological assets [7].

The critical dependence of the Russian agro-industrial complex on import of feed additives and vaccines aimed at realization of genetic potential of animal breeds - according to data of the Ministry of Agriculture in 2021 the most vulnerable categories are veterinary vaccines and feed enzymes: the share of import varies from 95 to 100%, including 70-80% of supplies from EU and USA [6; 7].

Despite the assurances of politicians to maintain the availability of imports of vaccines, prebiotics, antibiotics and vitamins for livestock, there is a very real risk of supply failure.
3 Between sanctions and the green agenda: in search of a sustainable development path

At the end of the scientific study an abbreviated Foresight session was held with the implementation of the "4 worlds" method, which allowed to form scenarios for the future development of the agroindustrial complex in the context of import substitution processes and international sanctions:

1. **Red world (international agro-industrial isolation)** - under this scenario, the Russian agricultural sector falls under international sanctions, and the strategic goal is to ensure food security of the country by deepening cooperation between EAEU countries: with Belarus (meat and dairy products; fresh vegetables), separate positions of fruits and fresh vegetables – with Iran and China. The end point of this scenario (time horizon: 3 - 5 years) is the modernization of the Eurasian food platform for the conclusion of smart contracts using blockchain technology and their integration with the logistics corridors of supply within EurAsEC.

2. **The Yellow World (technology in exchange for resources and investment)** - in this scenario, the political elite makes a kind of compromise to ensure the normal functioning of the agro-industrial complex through the spot import of critical technologies, seeds and animal
gene pools. In fact, this is a humanitarian intervention, implemented by the norms of international law. A promising "branch" of the scenario is the active expansion of the Russian Federation in the sphere of agriculture of North and South Africa, as well as the countries of South-East Asia (Cambodia, Laos, Vietnam) where the strategy "investment and equipment in exchange for agricultural products" will be implemented.) [9; 10].

**Green World (food catastrophe avoidance strategy)**

- the strategy aims at preventing food catastrophes by providing support measures to the Russian agro-industrial complex.
- Includes the supply of the latest SRPP, the most stable and productive samples of seeds and the gene pool of breeding animals.
- The potential achievement by the RF agro-market of a new world leader in the export of food and primary processing of agricultural products [11].

**Blue world (strategy of cross-border technological cooperation in the field of agriculture)**

- The world leaders represented by the EU, the USA, Canada, Great Britain, China come to the realization of the impossibility of implementing the program of green transition and large-scale implementation of ESG policy (environmentally responsible business) without the participation of Russia, and the agricultural sector is one of the most important blocks in achieving the goals of green economy.
- Special package of permissive measures includes:
  1. Providing Russian agribusinesses with access to the latest developments in the field of breeding varieties and breeds through joint R&D projects (average age of varieties of Russian breeding in the domestic market - 10-20 years, foreign - 5-10 years).
  2. Formation of joint farms built with the use of the latest digital technologies (scaling the project "smart farm").
  3. Guaranteeing the supply of dietary supplements, medicines and seed (breeding) stock from the EU countries and the USA.
  4. Simplification of phytosanitary control in mutual food supplies between Russia, China and the EU [12].

At the end of the Foresight session, a forecast describing the key temporal milestones of AIC development in the context of ongoing digital reforms was made (Table 2).

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<th>Forecast time milestone</th>
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**Table 2.** Key temporal milestones in the development of the agro-industrial complex in the context of ongoing digital reforms.
4 Conclusion

The modern stage of sustainable development of agroindustrial complex of Russia brings new complex and complex challenges and threats, to which there is no single correct answer, a soft and flexible approach to the assessment of prospects for further development of the world economy and the role of agroindustrial complex in ensuring its sustainable development is required. The current pressure on the food sphere has one goal - to maximally weaken and incapacitate the fundamental sphere of national economic security, but as scientific research has shown, this is unlikely, because thanks to a competent and far-sighted leadership a set of import substitution and development of its own production base has already been adopted since 2014, which today has already sufficiently revealed its potential to keep Russia the last word in the duel for future proliferation.

References

Note: Source: compiled by the author according to [10–12].

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