

# LOGISTICS INFRASTRUCTURE AS A COMPONENT OF THE NATIONAL PROMOTION SYSTEM

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**Abstract:** *Summarizes theoretical, methodological and practical problems of logistics and logistics infrastructure, their role and place in the system of modern agrarian business. The tendencies of logistics development in the national agroindustrial complex of Belarus are justified in the context of the functioning of the logistics infrastructure of the republic. A set of scientifically substantiated directions for improving the logistics infrastructure in the agrarian sector has been developed, taking into account the regulatory legal, organizational, economic and financial conditions of management.*

**Keywords:** *logistics, logistics infrastructure, agro-industrial complex, logistics center, efficiency.*

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## INTRODUCTION

The current stage of development of the economy of the Republic of Belarus is characterized by the formation of a logistics infrastructure, the organization of an effective investment process in the field of logistics, as well as the creation and functioning of market institutions of a logistic orientation as the most significant components of the market infrastructure.

The Republic of Belarus belongs to small states with rather highly developed economic potential, where the transport and logistics sector occupies a very significant share in the country's services market. The country has completed the implementation of the Logistics System Development Program for the period up to 2015 [1], the Republican Program for the Development of the Logistics System and Transit Potential for 2016-2020 [2] has been adopted. The logistics system of the republic is built on the effective use of geographical advantages. Through its territory there are paths connecting the countries of the European Union with the Russian Federation, the Republic of Kazakhstan and other countries.

## ЛОГИСТИЧЕСКАЯ ИНФРАСТРУКТУРА КАК СОСТАВЛЯЮЩАЯ НАЦИОНАЛЬНОЙ СИСТЕМЫ ПРОДВИЖЕНИЯ

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**Аннотация:** В статье обобщены теоретические, методологические и практические проблемы логистики и логистической инфраструктуры, их роль и место в системе современного аграрного бизнеса. Обоснованы тенденции развития логистики в национальном АПК Беларуси в контексте функционирования логистической инфраструктуры республики. Разработан комплекс научно обоснованных направлений по совершенствованию инфраструктуры логистики в аграрной отрасли с учетом нормативно-правовых, организационных, экономических и финансовых условий хозяйствования.

**Ключевые слова:** логистика, логистическая инфраструктура, агропромышленный комплекс, логистический центр, эффективность.

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The logistics infrastructure ensures the functioning of the system of procurement, supply, storage and delivery to the client. Nevertheless, the relevance of its research in the national agro-industrial complex is confirmed by the absence of appropriate structures, the slow formation of a backbone infrastructure sector, the growth of transaction costs, and the insufficient number of qualified specialists in the field of logistics, foreign economic activity and international trade law.

The purpose of the study is to identify current trends in the development of the logistics infrastructure in the agro-industrial complex of the Republic of Belarus and the rationale for its improvement, taking into account the regulatory, legal, organizational, economic and financial conditions of the economy.

In accordance with this goal, the following tasks are set and their system solution is proposed:

To substantiate the theoretical and methodological approaches to the formation of a logistics infrastructure in the agro-industrial complex in the market system of management;

to analyze the current state and development trends of the logistics infrastructure in the national agroindustrial complex of Belarus;

to develop directions of improving the logistics infrastructure to improve the efficiency and competitiveness of the agricultural sector.

The study is based on an analysis of the National Statistical Committee of the Republic of Belarus. Methods of system and comparative analysis, system linking, and computational-constructive methods were used.

## PRESENTATION PARTS

The study of special literary sources testifies that economists have given a lot of definitions of the logistics infrastructure, in each of which the authors, based on the analysis of the theoretical and methodological foundations of this category and the own approach developed to this problem, reveal its essence and practical purpose. In the process of research, we determined the main difference in the scientific directions, which consists in determining the number and location of each type of unit (s) needed to perform the functions of logistics, how many and what stocks should be kept at each facility and where to place customer orders for delivery [3, 4, 5, 6, 7].

In the opinion of N.G. Kuvayev, logistics infrastructure includes transport, warehousing and maintenance elements associated with additional processing of goods, with the provision of trade, domestic and administrative services, which are provided with the necessary resources - natural, material, technical, information, human, institutional and financial [8]. D.J. Bowersox and D.J. Kloss adds information and transportation facilities [9]. In this case, as V.V. Dybskaya, the nature of the functional area of the logistics system influences the solution of storage tasks: the choice of the form of ownership of the warehouse, its technical equipment, the storage system and the organization of the warehouse process [10].

Logistics in the agro-industrial complex, in the opinion of N.V. Kireyenka, should be regarded as the organization of a rational process of managing and regulating the flow of flows from suppliers of raw materials to consumers, the functioning of the sphere of circulation, the management of commodity stocks and information resources, and the creation of a commodity circulation infrastructure [6]. The conceptual foundations of the logistic

organization of resource support for the agroindustrial complex are set out in the works of B.A. Anikina, T.M. Vorozheykinoy, D.A. Ivanova et al. [11, 12, 13]. Actively worked in the search for optimal solutions in the process of forming the system of domestic scientists: V.G. Gusakov, I.A. Elovoy, Z.M. Ilyin, P.G. Nikitenko, I.I. Poleshchuk et al. [7, 14, 15, 16, 17]. At the same time, the relevance of the study of the logistics system in the agroindustrial complex is confirmed by the fact that in a saturated market the enterprises should be oriented not only to the production of agricultural products and food that are in demand, but also to the formation of an optimal distribution and commodity distribution system.

Having carried out systematic studies of the essence of the logistics infrastructure and in order to ensure the complexity of the agrarian sector, we are invited to consider it as a set of activities through which the process of movement of material and financial flows or the process of commodity circulation of agricultural raw materials and food products to the agricultural market is carried out and serviced (figure).

Infrastructure of the food market (author's approach)	
<p><i>Shopping center:</i> Wholesale and retail trade; intermediary organizations; commercial structures of large enterprises</p>	<p><i>Information complex:</i> Analytical centers; exhibition complexes and centers; marketing and consulting firms; information and advertising organizations</p>
<p><i>Credit-settlement complex:</i> Banking and insurance organizations; credit structures; settlement centers; investment and other funds</p>	<p><i>Staffing complex:</i> System of training and retraining of personnel; employment agencies; system for the organization and management of labor reserves</p>
<p><i>Logistics complex:</i> Storage facilities; enterprises of tare economy; transport system</p>	<p><i>Normative and legal complex:</i> Set of norms and rules regulating the relations of market entities; legal support and market support system</p>

**Fig 1.** Infrastructure of the food market (author's approach)

By now in the world agricultural practice formed micro-, meso- (the first group in terms of scale), macro- and megalogistic (the second group in terms of scale) systems were formed. They consist of interconnected links: resource companies, agricultural

enterprises and their subdivisions, marketing, trade, intermediary organizations, transport and forwarding enterprises, exchanges, banks and other financial institutions, enterprises of marketing, information, exhibition and fair support. The main features of

the functioning of logistics systems in the agroindustrial complex are: the form of ownership and the organizational and legal form; differences in the nature and purpose of the operation; different power, concentration and types of technological equipment used, and consumed resources; dispersal of technical means and labor resources over a large territory [11, 14, 15].

The first group of logistics systems is an integral part of the management system of the business entity, which provides for increasing the efficiency of the agro-industrial complex organizations and their competitiveness. We have established that the features of its functioning are also the goals and extent of coverage of basic operations. They allow to carry out intra-production relations (optimize management within the technological cycle of production); external (solve the problems associated with managing flows from their sources to destinations outside the production technological cycle); integrated (include elements of internal and external). In turn, the micrological system in the agricultural sector is designed to manage and optimize the material and associated flows during the supply, production and marketing of agricultural raw materials and food. It covers the scope of the enterprise and ensures the solution of local issues within its individual elements.

During the last decades, the process of structuring large groups of enterprises in corporations, connected by a single logistical system (mesological) has been observed in the world practice. This trend is typical for the agricultural complex. Global networks allow the organization of the corporate logistics system regardless of the geographic location of the enterprises. The logistics of the corporation (mesologistics) is mainly informative. The higher the level of the logistics system, the more attention is paid to information flows and less material.

The second group of logistics systems is a large organizational and economic management system, encompassing intermediary, trade and transport organizations and enterprises of various departments, as well as the economic infrastructure of a particular country or group of countries. The criteria for its formation and optimization are commercial, scientific, ecological, social, political and other purposes. As the experience of economically developed countries shows, the use of these systems leads to a reduction in: transportation costs by 7-20%; costs for loading and unloading operations and storage of material resources and finished products - 15-30; of total logistics costs - by 12-15%. In addition, the turnover of material resources is accelerating by 20-40%, and stocks are reduced by 50-100% [17].

The carried out researches have allowed to single out the tendencies of development of the logistics infrastructure in the Republic of Belarus, including the agroindustrial complex, which we defined as follows.

First, the active development of the sphere of commodity circulation, the introduction of innovative marketing and logistics processes, the manifestation of various forms of competition, the interaction of large, medium and small businesses became the basis for the development of the logistics infrastructure in the republic. Currently, more than 830 organizations operate in logistics and transport-forwarding activities (the first group), as well as 44 logistics centers (the second group).

As shown by the analysis of the economic activity of organizations, the main volume of services rendered by the organizations of the first group is transport-forwarding services (according to the results of 2015 – BYR 20,993.9 billion BYR) automobile (BYR 10,154.0 billion, or 48, 4%) and railway (9 569.4 billion BYR, or 46.1%) by transport. In 2015, the volume

of logistics services rendered by such organizations amounted to 1 568.9 billion BYR, which is BYR 51.9 billion more (3.4%) than in 2014. The largest volume of services falls on transport and logistics centers 1 135.9 billion BYR, or 72.4%. The volume of logistics services amounted to 1 097.6 billion BYR, including through transport and logistics centers, 89.4% [18].

Secondly, the second group is represented by 20 logistics centers created under the Program for the Development of the Logistics System of the Republic of Belarus for the period up to 2015, and 24 – outside the Program. At the same time, organizations are formed on the principle of sectoral orientation and are divided into:

- transport and logistics entities that are designed to provide a full cycle of related services to industrial and trade organizations to rationalize the transportation process and ensure the delivery of goods in the optimal time, routes, modes of transport and cargo;

- wholesale and logistics centers that specialize in wholesale consignments of domestic and imported products, and are designed to provide an expanded list of services for their preparation for implementation through the retail trade system. Such formations have great prospects in the wholesale trade of food products;

- multifunctional logistics complexes, including trade and business, administrative and business and exhibition centers.

Our studies show that 15 logistics centers have temporary storage warehouses and customs warehouses (JV “Brestvneshtans”, JSC “Belmagistralavtotrans”, JSC “Trade and logistics center” Ozertso-logistic “, RTEUE” Belintertrans - transport and logistics center “, RUE “Beltamozhservis” (six logistics centers), JV “Transit” LLC, LLC “Belsotra”, RUE “National Airport” Minsk “, JLLC” STL Logistic “, LLC” Vlate Logistics “.

By their activities, eight logistics centers are multimodal, since they have access roads of two or more modes of transport. These are JV “Brestvneshtans”, JSC “Trade and logistics center” Ozertso-logistic “, RTEUE” Belintertrans - transport and logistics center “, RUE” Beltamozhservis-2 “(Shchitomirichi village), Euroslad Service, JV” Transit “ OOO, OOO Belagrosterminal, JLLC STL Logistic. Stock exchanges are owned by Eurosklad Service LLC, Trade and Logistics Center Ozertso-Logistic, RTEUP Belintertrans - Transport and Logistics Center.

Third, the most attractive areas for the formation of a logistics infrastructure are Minsk (30 facilities) and Brest (six facilities) areas. Also from the existing logistics centers - 12 enterprises are state-owned, of which six are part of the Beltamozhservis RUE system. The rest are created at the expense of investments by national (production enterprises, transport and logistics companies, logistics operators, distributors, retailers, developers) and foreign investors (Russia, Azerbaijan and Iran).

Fourthly, in the Republic of Belarus from November 1, 2013 voluntary certification of logistic service providers was introduced. As of February 14, 2017, four business entities were certified for logistics services for compliance with STB 2306–2013 and officially correspond to the category “logistics center”. These include: OOO Eurotibas, JV Transit LLC, Baltsped Logistic LLC, Belsotra LLC.

Fifthly, the total area of covered warehouse areas of class “A” and “B” is more than 670 thousand m<sup>2</sup>, their common warehouses are 520, temporary storage warehouses and customs warehouses - 107, low-temperature warehouses and refrigerators – 43 thousand m<sup>2</sup>. The area of modern container terminals is more than 150 thousand m<sup>2</sup> [18].

Sixth, according to the World Bank, the Republic of Belarus demonstrates the relatively high quality of the transport and logistics infrastructure and can be classified as “partial measures”. As a result of 2016, our country ranked 120th among the 160 countries surveyed. Together with six sub-indicators Belarus scored only 2.4 points, which is 43.4% of the best result in the rating (the latter was awarded to Germany, which scored 4.23 points).

Belarus, worsened its position in all subindexes, the most significant subsidence was recorded with regard to the quality of trade and transport infrastructure (from 77th place to 94th), tracking of cargoes (from 79th to 90th), simplicity of organization of international transportation (from 102th to 115th).

In the member states of the Eurasian Economic Union, 10–12% of GDP is formed through logistics (transport sector - 7-8% of GDP), in the countries of the European Union - 20-25%. The analysis shows that the barriers existing between the EEA countries lead to additional losses and an increase in logistics costs that in the Member States Union are very large and average 20–25% in the final cost of production (for reference: Russia – 19%, Kazakhstan – 25%). At the same time, the world average is at 11%, in China – 14, EU – 11, USA and Canada – 10%. As a result, the economy of the EAEC countries is forced to bear the transport load twice as much as in the developed countries [6]. Despite the attempt of the systemic logistics formation in recent years, our studies allow us to conclude that the Belarusian economy is characterized by insufficient use of logistics activities:

- lack of logistics centers specializing in agricultural products;
- irrational placement of already established and functioning business entities in logistics;
- sufficiently high production and transport costs of purchasing, processing, marketing enterprises and organizations;
- lack of investment in the development of logistics infrastructure, lack of market 3PL-services, the lack of a system integrator level 4PL;
- insufficient number of wholesale food markets at large and medium-wholesale levels, including their technical equipment;
- lack of storage facilities, low level of their equipment with modern loading and unloading facilities, types of packaging and packaging, as well as equipment that ensures the safety of perishable agricultural products;
- insufficient number of qualified specialists in the field of distribution logistics, foreign economic activity and international trade law.

In this connection, the main directions of improving the logistics infrastructure, ensuring the increase of efficiency and competitiveness of the agrarian sector, should be:

1. Active development of the food market infrastructure through the creation of regional logistics centers involving private companies, trade, transport and insurance organizations, banks, accumulating funds within the framework of various investment financing models.
2. Improvement of the logistics management system based on the introduction of new information technologies, methods of reengineering.
3. Further development of the agrarian commodity distribution network of the Ministry of Agriculture and Food of the Republic of Belarus, the Belarusian State Concern of the Food Industry “Belgospisheprom” and other suppliers.

4. Provision of program and information support for the management and operation of the logistics system in the agro-industrial complex on the basis of the distribution of virtual networks of transport forwarding, constant monitoring of the state of vehicles and cargo, and information support for intermodal transport operators.

5. Formation of the system of promotion of products to the market - the creation of new subjects of the distribution network or a change in the status and expansion of the functions of existing entities. An example is the development of an interstate target program "Creation of the Eurasian Commodity Distribution System for Agricultural Products, Raw Materials and Food".

6. Expansion of the practice of organizing additional education on the basis of advanced training, internships and retraining of employees carried out in accordance with the current legislation.

A complex combination of theoretical and applied aspects will allow the agro-industrial complex to obtain a strong competitive advantage and increase the competitiveness of products in the external and internal markets.

## CONCLUSION

Logistic infrastructure is a complex of specialized organizations providing the movement of material and financial flows and / or the process of commodity circulation of agricultural raw materials and food products to the internal and external agrarian markets, as well as maintaining the necessary market supply and demand, reducing the implementation period, reducing the costs of commodity circulation. The scientific novelty of this approach is the integration of functional areas associated with the flow of material flow from the producer to the consumer of agro-food products (transportation, inventory management, storage, information and communication support, etc.) into a single complex.

Thus, the totality of the regulatory, legal, organizational and economic conditions substantiated in the study creates an opportunity to improve the infrastructure in the agro-industrial complex on the basis of integration of marketing and logistics, the formation of appropriate organizational structures at different levels of management, the development of domestic sales infrastructure and distribution networks abroad. The application of the proposed directions allows solving the problems of the development of the agro-food industry in Belarus in a new way aimed at sustainable operation of the industry, strengthening its own infrastructure, optimizing commodity flows in accordance with domestic needs and increasing the export potential of the agro-industrial complex.

The main directions of infrastructure development and logistics support of the agrarian products market should be: development of common regulatory and legal norms on the regulation of the infrastructure of the agricultural market in the member states of the EAEC; development of joint projects for the creation of international and regional logistics centers with the involvement of trade organizations, transport companies, banks, insurance companies; improving the management of the market infrastructure based on new information systems, reorganizing the agricultural business based on modern methods of reengineering, implementation of specialized systems to increase labor productivity and production management; development of software and information support for the management and operation of the market infrastructure.



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