DEVELOPMENT OF THE AGRO-INDUSTRIAL COMPLEX OF THE REPUBLIC OF MOLDOVA, WAYS TO IMPROVE THE SPHERE AND MANAGEMENT SYSTEM

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Relevance of the research. The agro-industrial complex is the most important component of the economy of the Republic of Moldova. The protracted crisis of the agrarian sphere was, first of all, the result of the weakening of the role of state regulation and the management system of the agro-industrial complex. The effective economic development of the agricultural sector of the Republic of Moldova at the macro and micro levels requires the improvement of the system of management of the agricultural sector at all levels.

Formulation of the problem. Related to the improvement of management at all levels of the country's agro-industrial complex, namely the competitiveness of enterprises under the influence of various risk factors, the correct formation of strategic management at the level of the state and enterprises, the use in the production of certain models of rational placement of production infrastructure for the effective development of enterprises, which ultimately ensure the sustainable economic growth of the country's agricultural sector.

Setting the task, the purpose of the study. The purpose and objectives of the article are to study the structure of the agro-industrial complex management system, the dynamics of the main indicators characterizing the state of agriculture of the Republic of Moldova; identify problems, and develop recommendations for improving the management system of the agro-industrial complex of Moldova.

Material and methodology. During the writing of the article, general scientific and special methods were used, namely the abstract-logical, statistical-economic, and graphic methods. The information and empirical base of the study are based on data from the National Bureau of Statistics of the Republic of Moldova.

Presentation of the main material (results of work). The article conducted a study of the composition of the agro-industrial complex of the Moldavian SSR; the current state management system of the agro-industrial complex was analyzed; the degree of impact of reforms on the management structure of the agro-industrial complex was determined; in-depth analysis of the main indicators characterizing the state of this industry was carried out; proposed are directions of market infrastructure development through suitable channels of agricultural products distribution.

Field of application of results. The materials, results, and conclusions of the study can be used by government bodies, higher education institutions, and student organizations.

Conclusions according to the article. The results of the reforms carried out in the agricultural sector of the country's economy were summarized, problems that arose as a result of the ongoing reorganizations in the agro-industrial complex system were identified, and a deep analysis of the development of the agricultural economy was made. The authors also presented recommendations for improving the processes of management of the agricultural sector of the Republic of Moldova, and presented the author's conceptual approaches to the formation of the composition of the agro-industrial complex.

Key words: agro-industrial complex of Moldova, innovations in the agro-industrial complex, difficulties and opportunities, structure, composition, management.

JEL Classification: Q13, Q17.
РОЗВИТОК АГРОПРОМИСЛОВОГО КОМПЛЕКСУ РЕСПУБЛІКИ МОЛДОВА, ШЛЯХИ ВДОСКОНАЛЕННЯ СФЕРИ ТА СИСТЕМИ УПРАВЛІННЯ

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Актуальність теми дослідження. Агропромисловий комплекс є найважливішою складовою економіки Республіки Молдова. Затяжна криза аграрної сфери стала, насамперед, наслідком посилання ролі державного регулювання та системи управління АПК. Ефективний економічний розвиток аграрного сектора РМ на макро та мікрорівні потребує вдосконалення системи управління аграрним сектором на всіх рівнях.

Постановка проблеми. Поєднання із удосконаленням управління на всіх рівнях АПК країни, а саме конкурентоспроможності підприємств під впливом різних факторів ризику, правильного формування стратегічного управління на рівні держави та підприємств, використання у виробництві певних моделей раціонального розміщення виробничої інфраструктури для ефективного розвитку підприємств, що забезпечують, зрештою, стійке економічне зростання аграрного сектора країни.

Постановка задачі, цілі дослідження. Постановка проблеми, пов’язаних із удосконаленням управління на всіх рівнях АПК країни, а саме конкурентоспроможності підприємств під впливом різних факторів ризику, правильного формування стратегічного управління на рівні держави та підприємств, визначення впливу різних факторів ризику, правильного формування стратегічного управління на рівні держави та підприємств, відповідно до статті, що вдосконалення системи управління АПК країни.

Методика дослідження. У ході написання статті було використано загальнонаукові та спеціальні методи, а саме абстрактно-логічний, статистико-економічний та графічний метод. Інформаційно-емірічна база дослідження ґрунтується на даних Національного Бюро статистики Республіки Молдова.

Висновки. Матеріали, результати та висновки дослідження можуть бути використані державними органами, вищими навчальними закладами, студентськими організаціями.

Ключові слова: агропромисловий комплекс, інновації, ринок, конкурентоспроможність, управління, економікі.
However, it should be noted that the agro-industrial complex in Moldova is still the main one in the country’s economy, the agro-industrial complex accounts for about 60% of the GDP and more than 50% of the export of manufactured products.

The agro-industrial complex was formed in Soviet times under the influence of some development conditions, which can be attributed to - the favorable agroclimatic conditions of Moldova, the highest provision of its labor resources, which allows you to specialize in the production of labor-intensive types of products, as well as relatively low costs for the production of agricultural products, the state provision of agricultural machinery, mineral fertilizers, fuel, and other resources played an important role.

**What is the agro-industrial complex?**

The agro-industrial complex (agro-industrial complex) is a set of interconnected sectors of the economy involved in the production, and processing of agriculture and bringing it to the consumer.

The key task of the agro-industrial complex is to provide the country’s population with food.

The agro-industrial complex was formed as part of some of the most important interconnected industries - the agricultural, industry that processes agricultural raw materials, enterprises, and organizations that provide agro-industrial services (agrochemical and reclamation services, elevators, veterinary services, seed laboratories, motor transport bases, etc.); especially at the time, organizations specializing in the sale of finished products can be distinguished - procurement and sales offices, bases, branded grocery stores, food markets.

Considering the spheres included in the agro-industrial complex, it should be noted that such an organization was inherent in enterprises of this sector of the economy in the 70-85 years (Figure 1). In the agro-industrial complex, agriculture (2 links of the agro-industrial complex) seems to be the basic share of the national economy, in Moldova’s GDP, it is more than 15%.

In this complex, the agro-industrial complex is divided into separate components, the main of which is associated with a change in ownership forms. The numerous industry and functional commercial structures formed here, especially in the form of JSC (SA), operating in the field of material and technical supply, and trade, pursue one goal - making a profit, and by no means protecting the interests of agricultural producers. The goals, objectives, and functions of the systems of state, economic and economic management, and local self-government are poorly marked. In this regard, legislation, provisions and charters and other regulatory and legal documents on the management of the agro-industrial complex are imperfect, vague, and ambiguous.

![Figure 1. Composition of the Agro-Industrial Complex of the Moldavian SSR](source: [1])

It should also be noted that the formation of the composition of the agro-industrial complex was influenced by reforms carried out in agriculture after the collapse of the USSR, as a result of which the newly minted
composition of agricultural land plots was formed in the form of ownership. Representatives of an impressive share of this property were newly created enterprises: limited liability companies (SRL), production cooperatives, peasant farms, etc. As of January 1, 2022, 74% of the land is privately owned and only 26% is in public (state) (Figure 2).

![Figure 2. Composition and structure of agricultural land by forms of ownership in the Republic of Moldova as of January 1, 2022](https://statbank.statistica.md/)

Analysis of the composition and structure of agricultural land (data presented in Figure 3) indicates a significant share of arable land – 74% of the total area of farmland, long-term plantings of 275,5 thousand hectares (10%), including vineyards 124, 6 thousand hectares (5%), gardens 126, 6 thousand hectares (5%); pastures 336.0 thousand hectares. (12%). The area of agricultural land in the country as a whole for the analyzed period from 2005 to 2021 decreased by 1,6 million hectares, and as of January 1, 2022, amounted to 2493,1 thousand hectares.

![Figure 3. Composition and structure of agricultural land in the Republic of Moldova as of January 1, 2022](https://statbank.statistica.md/)

The current situation could not but affect the sectoral structure of the agricultural sector of our country and regions. The analysis of the structure of agricultural production by industry over the period under review in Moldova (Table 1) indicates a change in the specifics of this industry. There was a redistribution of the ratio between crop production and animal husbandry.

Over the past twenty-year period, the share of crop production in the country as a whole has increased, in 2000, respectively, amounted to 70%, and in 2021, 78,2%. Due to the bankruptcy and liquidation of many large livestock complexes, the share of the livestock industry in gross agricultural production for the period from 2000 to 2021 decreased significantly, both in the country as a whole and in the districts. So, if in 2000 the share of animal husbandry was 24,4%, in 2021 19, 9%, the decrease was 4,5%.
The agricultural sector of the Republic of Moldova is dominated by crop production (Figure 4). A significant share of agricultural products in value terms is represented by the following types: cereals, grapes, vegetables, fruits, pork, milk, and poultry. Grain crops and sunflowers occupy the first place in this list, thanks to the impressive share of arable land – almost 70% of the total sown area. The root causes of the concentration of grain production are wide mechanization, relatively little need for capital investment, low labor intensity, reliable markets and profit opportunities, and a limited need for irrigation. From 2005-2021, crop production in the Republic of Moldova amounted to 70-80% of the total agricultural production.

However, despite a significant share of crop production in the structure of agricultural production and a rich harvest, a decline continued in the livestock sector. Animal husbandry produces approximately 30,0% of agricultural output by cost. Cattle of the dairy and meat direction, pigs, and sheep are bred in the country, poultry farming is almost widespread. But livestock productivity is very low, and even personal needs are not met, the reason is a decrease in the number of animals at times, this is indicated by the indicators of the given data in Table 2.

### Table 1. Production of agricultural products in farms of all categories (million lei)

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<tr>
<td>Agricultural products – in total:</td>
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<td>including</td>
<td>8268</td>
<td>12688</td>
<td>19873</td>
<td>27193</td>
<td>30362</td>
<td>34142</td>
<td>32637</td>
<td>34597</td>
<td>30051</td>
<td>48434</td>
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<tr>
<td>Crop production</td>
<td>5790</td>
<td>8449</td>
<td>13616</td>
<td>18082</td>
<td>21098</td>
<td>24354</td>
<td>22883</td>
<td>24670</td>
<td>20399</td>
<td>37896</td>
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<tr>
<td>Livestock products</td>
<td>2202</td>
<td>3851</td>
<td>5785</td>
<td>8584</td>
<td>8768</td>
<td>9192</td>
<td>9190</td>
<td>9246</td>
<td>9135</td>
<td>9683</td>
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<tr>
<td>Agricultural services</td>
<td>276</td>
<td>388</td>
<td>471</td>
<td>527</td>
<td>496</td>
<td>515</td>
<td>564</td>
<td>679</td>
<td>537</td>
<td>913</td>
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Source: developed by the authors based on data from the National Bureau of Statistics of the Republic of Moldova, 2022. URL:https://statbank.statistica.md/

### Table 2. Livestock in farms of all categories of the Republic of Moldova for the period from 2005 to 2021, thousand heads

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<tbody>
<tr>
<td>Cattle</td>
<td>331</td>
<td>222</td>
<td>191</td>
<td>186</td>
<td>182</td>
<td>167</td>
<td>145</td>
<td>124</td>
<td>109</td>
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<tr>
<td>Including cows</td>
<td>231</td>
<td>161</td>
<td>137</td>
<td>128</td>
<td>123</td>
<td>113</td>
<td>97</td>
<td>81</td>
<td>71</td>
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<tr>
<td>Pigs</td>
<td>398</td>
<td>377</td>
<td>473</td>
<td>453</td>
<td>439</td>
<td>406</td>
<td>397</td>
<td>397</td>
<td>340</td>
</tr>
<tr>
<td>Sheep and goats</td>
<td>942</td>
<td>915</td>
<td>875</td>
<td>869</td>
<td>870</td>
<td>843</td>
<td>770</td>
<td>677</td>
<td>617</td>
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<tr>
<td>Horses</td>
<td>73</td>
<td>54</td>
<td>43</td>
<td>39</td>
<td>37</td>
<td>34</td>
<td>26</td>
<td>26</td>
<td>22</td>
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<tr>
<td>Birds</td>
<td>17522</td>
<td>22457</td>
<td>3535</td>
<td>4008</td>
<td>4351</td>
<td>4521</td>
<td>3624</td>
<td>4094</td>
<td>3263</td>
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Source: developed by the authors based on data from the National Bureau of Statistics of the Republic of Moldova, 2022. URL:https://statbank.statistica.md/
Analysis of the given data in Table 1, certifies the systematic deterioration of the situation of the entire animal population. Thus, for the studied period from 2005-2021, the reduction in the number of animals occurred mainly due to slaughtering. The number of cattle decreased by 67% or 222 thousand heads. During the same period, the number of sheep and goats decreased by 325 thousand heads or 35%, and the number of pigs decreased by 15% or 58 thousand heads. A significant reduction in the number of animals occurred horses by more than 3 times and birds by 5 times. On average, the rate of decline in livestock and poultry in Moldova is 5.6% per year or 72,4 thousand heads.

As a result of the reduction in livestock, the production of the main types of livestock products also fell (Table 3.). Livestock products of the Republic of Moldova have the following structure: pigs – 57.7%, poultry – 29.2%, cattle – 9.7%, sheep and goats – 2.4%, and other products – 1%. 86% of livestock is concentrated in the private sector, including cows – 92%, pigs – 91%, sheep, and goats – 96%. The dairy industry produces 11.8% of the total agricultural output (skimmed milk, cottage cheese, milk powder, soft cheeses, and other products, mainly intended for the domestic market).

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<tr>
<td>Sales for slaughter of livestock and poultry, thousand tons</td>
<td>121</td>
<td>150.3</td>
<td>174.5</td>
<td>184.3</td>
<td>157.8</td>
<td>163.3</td>
<td>158.6</td>
<td>159.2</td>
<td>156.1</td>
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<tr>
<td>Milk, thousand tons</td>
<td>659</td>
<td>591.2</td>
<td>519.7</td>
<td>504.3</td>
<td>485.2</td>
<td>411.7</td>
<td>367.3</td>
<td>321.7</td>
<td>295.3</td>
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<tr>
<td>Including cow's milk, thousand tons</td>
<td>561.2</td>
<td>554.1</td>
<td>479.5</td>
<td>462.1</td>
<td>442.7</td>
<td>373.1</td>
<td>331.7</td>
<td>290.5</td>
<td>264.9</td>
</tr>
<tr>
<td>Eggs, million pcs</td>
<td>762</td>
<td>718.5</td>
<td>628.8</td>
<td>673.5</td>
<td>707.2</td>
<td>688.7</td>
<td>686.6</td>
<td>627.5</td>
<td>578.4</td>
</tr>
<tr>
<td>Wool (in physical weight), tons</td>
<td>2079</td>
<td>2066.7</td>
<td>1899.3</td>
<td>1708.5</td>
<td>1850.2</td>
<td>1917.5</td>
<td>1755.1</td>
<td>1464.1</td>
<td>1264.8</td>
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Source: developed by the authors based on data from the National Bureau of Statistics of the Republic of Moldova, 2022. URL:https://statbank.statistica.md/

The sale of livestock and poultry for the study period 2005-2021 was not stable. In 2021, it amounted to 156.1 thousand tons, which is 29% higher than in 2005, and compared to 2020, production decreased by 2%. And compared to 2016, the decrease occurred by 15%. The amount of milk produced in 2021 amounted to 295.3 thousand tons, which is 45% of the amount produced in 2005, compared to 2021 decreased by 8%.

According to statistics, 60% of dairy farms are located in the north of the republic, and the rest of the dairy products come from the central and southern regions. This distribution has developed since the time of the Soviet Union. Egg production decreased by 24%, and stubborn wool, during the analysis period decreased by 2 times.

The development of this sector depends on the decapitalization of enterprises specializing in the production of livestock products, the reduction of livestock and forage crops, low livestock productivity, lack of access to sales markets, and fierce competition with imported products that prevail over local products.

The agro-industrial complex also includes food, processing, and light industry, among all industries the leading place is occupied by the food industry – the cost of produced products is more than 40%. The enterprises of the fruit and vegetable industry are concentrated in the southeast of the country – Cahul, Chisinau, Tiraspol, and Bender. The sugar industry is concentrated in the north of the country, wineries are concentrated mainly in the center and south of the country, where grape plantations are located. The enterprises of the oil mill - the fat industry are equally located in the country. The light industry uses mainly imported raw materials for cotton and silk fabrics. The production of cotton fabrics is established in Tiraspol, silk fabrics in Bender, and carpet products in Ungen.

As for other blocks of the agro-industrial complex, the procurement of agricultural products, the production, and repair of agricultural machines, plant protection, reclamation, etc., ceased to exist. These functions are partly performed by private-sector enterprises. The reason lies in the transition from a centralized to a market system of farm management, which drove the economy of Moldova, including the agricultural sector, to serious changes in the structure of production and priorities in the agricultural sector, data and several other root causes contributed to a change in specialization in the agricultural sector of the economy, both in the country as a whole and in areas, farms. This led to the collapse of economic ties among the subjects of the agricultural sector, an increase in differences between them in terms of the degree of economic development, the loss of sales markets, decreasing in the number of employment, and the potential of qualified personnel.

As it was noted, the transition from a centralized to a market system of farm management drove the economy of Moldova, including the economy in the agricultural sector, to serious deformations. Fundamental changes in the structure of production in the agricultural sector, a sharp restriction of the state order for agricultural products, as well as a number of other points changed the priority scales in the agricultural sector. This
led to a change in the specialization of the agricultural sector, and in many cases, the deserialization of the territories of regions, and farms, led to the breakdown of economic ties among the subjects of the agricultural sector, a repeated increase in differences between them in terms of the degree of economic development and, ultimately, to the collapse of the entire national economic complex. There was a threat to the very existence of the sector: domestic production is becoming less and less in the domestic market of the republic. In the agricultural sector, employment conditions, production structures, and scientific and technological degradation are reduced. As a result, the professional and qualification potential accumulated over the previous years in the agricultural sector was largely not in demand [4].

Agricultural production has always been considered a key direction of Moldova’s economy. The instability of the agricultural sector of the country’s economy was also reflected in the development of agricultural exports, especially since these problems significantly affected crop production and animal husbandry. This is evidenced by the indicators of the export of crop and livestock products of the Republic of Moldova for 2012-2021 (Table 4).

Table 4. Export of agricultural products of the Republic of Moldova for 2012-2021 (million dollars)

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<tbody>
<tr>
<td>Live animals; animal products</td>
<td>26.87</td>
<td>24.96</td>
<td>43.25</td>
<td>12.53</td>
<td>18.27</td>
<td>19.21</td>
<td>16.09</td>
<td>12.42</td>
<td>11.45</td>
<td>11.62</td>
</tr>
<tr>
<td>Products of plant origin</td>
<td>149.90</td>
<td>158.66</td>
<td>498.37</td>
<td>102.51</td>
<td>70.09</td>
<td>111.07</td>
<td>110.83</td>
<td>113.07</td>
<td>132.27</td>
<td>154.18</td>
</tr>
<tr>
<td>Total agricultural products</td>
<td>176.77</td>
<td>183.62</td>
<td>541.63</td>
<td>115.04</td>
<td>88.36</td>
<td>130.22</td>
<td>126.92</td>
<td>125.49</td>
<td>143.72</td>
<td>185.81</td>
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Source: developed by the authors based on data from the National Bureau of Statistics of the Republic of Moldova, 2022. URL: https://statbank.statistica.md/

Agricultural products are supplied to the countries of the European Union, Asia, the CIS, and the Middle East. In 2021, the number of exports of agricultural goods amounted to 185.81 million dollars, this is much higher for the entire analyzed cycle, except for 2014, which was the highest-yielding year in the last 30 years. In 2021, the total amount of exports increased by 32.4% (+60.32 million dollars) compared to 2019. However, agricultural exports have consistently declined at an average rate of more than $13 million per year over the 20 years under review (as evidenced by the linear trend y = -13.34x + 255.13).

It should be emphasized that in the structure of agricultural exports, the largest share is occupied by the number of exports of crop products – 83%, livestock only 17%. One of the main reasons for the significant reduction in livestock and animal productivity, as well as exports from livestock products, is allowed only bee honey and egg powder are. Restrictions on the export of livestock products are explained by the fact that most of these products are produced in a household that does not meet uniform standards and are not competitive due to high costs.

**The consequence of this was:**

1. Complete loss of the system of the agro-industrial complex as an object of whole management (until 1990, the agro-industrial complex had a clear system of governing bodies, which included such sectors of the national economy as agriculture, processing, trade, repair, transport, procurement enterprises. and so on.)
2. Unjustified fragmentation of the agro-industrial sector of Moldova and the loss of a significant number of public administration functions between ministries and departments, parallelism and duplication in work.

3. Lack of appropriate administrative structures for the agro-industrial complex.

4. Change of authority and responsibility of public administration bodies, etc.

Conclusions and recommendations:

At the current stage, it is impossible to master crisis phenomena and lay the foundation for the stable formation of the agricultural sector outside the development of a scientifically sound strategy for the formation of the industry at all levels of management, as well as it is necessary to improve technologies and approaches to the organization of management at all levels of the agricultural sector of the country’s economy. It should be noted that the key outcome of solving these problems should be reorganization in the organizational structure of the management of the agricultural sector of the economy, which will contribute to the effective formation of the agro-industrial complex. We join the statements of the students of the Republic of Moldova A.N. Sratan, N.P. Perchinskaya, E.A. Baranova, who are researching this most relevant topic in the agricultural sector.

For the team and organizational structure of the management of the agro-industrial complex of Moldova to meet the composition of the agro-industrial complex that existed in our country before the collapse of the union (Figure 1) and to successfully organize management in this sector of the economy, it is necessary:

1. Integration into a single economic chain of production, processing, and sale of agricultural raw materials and products. Mediation, monopoly of customers of agricultural raw materials, and change the quantitative and property of processing enterprises should be excluded, which will contribute to the formation of the agro-industrial complex of Moldova in the conditions of the post-industrial economy and innovative transformation.

2. An important role in ensuring the sustainability of the functioning and effective formation of the agro-industrial sector should be played.

Consumer cooperation, which will be able to include the solution of subsequent issues:

- procurement of agricultural machinery and tools, seeds, and mineral fertilizers;
- maintenance of agricultural machinery and repair;
- organization of nurseries for agricultural plants;
- creation of tribal subsidiary (farm farms);
- informational and consulting assistance, etc.

It should be noted that increasing the competitiveness of agricultural products is not an instant solution. Without the development of market infrastructure and the establishment of suitable distribution channels for products integrated into external trading networks, the added value of agricultural products will decrease.

Thus, it is necessary to focus on:

1. The creation of wholesale agri-food markets (auctions of agricultural products) will be carried out by modernizing advertising structures.

2. The creation and formation of marketing cooperatives are designed to improve the quality of products, and the volume of production, contribute to the allocation of marketing investments (packaging, sorting, processing, storage), and increase the bargaining potential of agricultural producers.

3. Support for small and medium-sized enterprise refining and marketing investments.

References


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