

# Agroindustrial complex of the Chuvash Republic: intra-regional and All-Russian significance

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**Abstract.** This paper reveals the current state of various areas of the agro-industrial complex of the Russian region of the Chuvash Republic. Particular attention was paid to comparing a number of parameters characterizing the agro-industrial production of the republic with the corresponding parameters of other areas of the economy of the region, the role of the agro-industrial complex of Chuvashia in the all-Russian agro-industrial production. In the Chuvash Republic, the importance of the agro-industrial complex for the regional economy is often emphasized. Moreover, in the typology of Russian regions in terms of the level and type of economic development, the Chuvash Republic is quite often referred to the category of agro-industrial regions. The paper describes the absence of exceptional natural and climatic advantages for the development of the agro-industrial complex of the region, the relative weakness of the agricultural and agro-industrial sectors of the republic against the background of a number of other regions of Russia. The share of the industry in the structure of GRP and employment in the region is analyzed, while its importance is highlighted against the background of manufacturing industries and the service sector. It also stands out that the modern agro-industrial complex of the Chuvash Republic is of great importance for the socio-economic development of the region and the prospects for further development. However, it is not possible to classify Chuvashia as an agrarian and even agro-industrial region. The most important in the republic is not the agro-industrial complex, but the social infrastructure, industrial infrastructure and industry.

## 1 Introduction

The agro-industrial complex is a group of interrelated enterprises, organizations that specialize in the production, transportation, storage, processing, trade of agricultural products, as well as in the production of labor tools for agriculture, its scientific and personnel support.

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During the last years of crisis and stagnation, it was the agro-industrial complex of Russia, especially agriculture itself, in comparison with other sectors and intersectoral complexes of the country's economy, that showed a "record growth" in production volumes [1-2]. Minister of Agriculture of Russia D.N. Patrushev said in 2019 that the export of agricultural products could almost double the supply of domestic weapons abroad. In the agro-industrial complex, experts saw the potential that could help the development of the entire Russian economy. Special attention began to be paid to the development of the agro-industrial complex. It was not only about import substitution [3], but also about increasing exports of products [4-5]. In 2018, within the framework of the national project "International cooperation and export", the federal project «Export of agricultural products» [6] begins to be implemented. The main goal of the project was to achieve by 2024 the volume of exports of agricultural products (in value terms) in the amount of 34 billion US dollars. According to Decree of the President of the Russian Federation of January 21, 2020 No. 20 «On Approval of the Food Security Doctrine of the Russian Federation» in a period of political and economic tension, which is caused not so much by Russia's «military operation» in Ukraine, but by the very strong reaction of the countries of the «collective West» to it, agro-industrial production should ensure food security and independence of our country, save it from food shortages (the threat of which for a number of regions of the world was discussed from the stands of the United Nation Organization and the European Union) [7], as well as maintain and expand the geographic diversification of trade relations. The countries of the «collective West», declaring a boycott of technical and economic cooperation with Russia, lowering the new «Iron Curtain», retain many opportunities for Russian farmers in it. In particular, by banning Russian hauliers and ships flying the Russian flag from operating on the territory of the European Union [8], arriving at European ports, the European Union made an exception for those who transport agricultural and food products [9].

In the Chuvash Republic, the importance of the agro-industrial complex for the regional economy is often emphasized. The «Strategy for the socio-economic development of the Chuvash Republic until 2035» states that one of the driving forces for the development of the republic, second in importance after the manufacturing industry, should be the agro-industrial complex (including storage and processing). In scientific publications devoted to the problem of the prospects for the development of agriculture in the republic (Shigilcheva S.A., Danilova P.V., Prokopyev A.V., Chernyshova T.N., Shirokova O.N.), the «leading backbone» role of «... agro-industrial complex and its basic activity - agriculture ...» in the economy of the region. T.V. Pogodina in the article «Analysis and integral assessment of the socio-economic development of the regions of the Volga Federal District», speaking about the competitiveness of «industries and spheres of life» of the «subjects» of the Volga Federal District, considers agriculture to be the most important industry that provides an absolute competitive advantage for the Chuvash Republic. In the typology of Russian regions, according to the level and type of economic development, the Chuvash Republic is quite often referred to the category of agrarian-industrial regions. For example, V.I. Menshikov in the work «Typology of regions in the context of substantiating the use of tools for regional socio-economic policy», or M.V. Gavrilova and N.V. Danilov, who in the article «Regional Features and Trends in Socio-Economic Development» speak of the «established agro-industrial» specialization of Chuvashia, as well as some others [10]. Agriculture will produce more food from less land through the efficient use of natural resources, as scientists have long recognized [11]. The concept of precision farming in today's sustainable development is becoming increasingly important. There are several questions to discuss. Is the agro-industrial complex really the leading intersectoral complex of the Chuvash Republic at present? What is its composition and role of the «basic activity» – agriculture? How significant are the results of the agro-industrial activity of the

enterprises of the republic throughout the country or the Volga Federal District? Is it permissible to talk about the agrarian-industrial orientation of the region's economy?

## **2 Materials and methods**

The socio-economic significance of the entire agro-industrial complex or only agriculture in the regions is used as one of the bases of their typology [12, 13]. T.G. Nefedova used in her monograph «Rural Russia at a Crossroads: Geographical Sketches» such a parameter as the share of people employed in agriculture and forestry when dividing the countries of the world and regions of Russia into «post-agrarian, post-industrial», «hyper-industrial», «industrial», «industrial- agricultural» and «agro-industrial». According to this typology, «agro-industrial» regions include those in which the share of employed in the agricultural sector is at least 15% (up to 30%), «industrial-agrarian» - with a share of employment of at least 10% (up to 15%, with 30 % employed in industry) [14].

Also, the agro-industrial or agricultural specialization of the region can be indicated by such indicators as “the share of the gross regional product produced by agro-industrial complex enterprises” or “the share of economic entities engaged in agricultural and / or agro-industrial production in the total number of economic entities” [15]. The significance of the latter indicator is significantly limited, because according to the Federal Law No. 135-FZ of July 26, 2006 (as amended on April 1, 2022) «On Protection of Competition»: «... an economic entity is a commercial organization, a non-profit organization that carries out activities that bring income to it, an individual entrepreneur, another individual who is not registered as an individual entrepreneur, but carries out professional activity that generates income ...», Also, the agro-industrial or agricultural specialization of the region can be indicated by such indicators as «the share of the gross regional product produced by agro-industrial complex enterprises» or «the share of economic entities engaged in agricultural and / or agro-industrial production in the total number of economic entities». The significance of the latter indicator is significantly limited, because according to the Federal Law «On Protection of Competition»: «... an economic entity is a commercial organization, a non-profit organization that carries out activities that bring income to it, an individual entrepreneur, another individual who is not registered as an individual entrepreneur, but carries out income-generating professional activity...» there is too much difference in the size of organizations that Rosstat refers to as «economic entities». However, as an auxiliary indicator that reinforces the «share of employment» and «share of GRP» it is quite acceptable [16, 17].

The significance of the entire agro-industrial sector of the region, its individual branches and types of production in the general system of territorial division of labor in the agro-industrial complex of the federal district, the country, will be shown by the values of the shares of gross production of a particular agro-industrial product in the total volume of its production in the Volga Federal District and the Russian Federation [18, 19].

## **3 Results**

The natural and climatic conditions of Chuvashia do not create significant problems for the development of agriculture, and especially the agro-industrial complex as a whole, however, they do not provide any important advantages. The Chuvash Republic is located in the north of the Volga Upland, between the Sura and Sviyaga tributaries of the Volga. Chuvashia has a temperate continental climate with pronounced seasons. The maximum solar radiation occurs in June (on average, about 94 kcal of solar heat per year per 1 cm<sup>2</sup> of the surface), the annual radiation balance is positive and amounts to about 29 kcal. A

positive balance is observed from April to September. The average temperature in January is from -12.3 to -13.5°C, in July - +18.2-19.4°C. Precipitation is 450-600 mm/year, the maximum amount is in summer. The moisture coefficient is equal to one. The growing season is 170-175 days. Gray forest and sod-podzolic soils predominate in the republic (they occupy 70% of the territory, mainly in the north and in the center of the republic). In the southwestern and southeastern regions of the republic there are leached and podzolized chernozems (20% of the region's territory). Unfavorable weather phenomena for Chuvashia are characterized by squally winds and hurricanes, showers and thunderstorms, and hail in summer. In winter, there are ice and ice, fogs, heavy snowfalls and snowstorms. Chuvashia is located in a zone with an unstable moisture pattern throughout the year, years with excessive moisture can be replaced by dry years. Significant damage to the agriculture of the republic is caused by planar washout, rill erosion, microrill wash, ravine erosion and drip-rain destruction. The intensity of soil erosion from arable land exceeds 20 tons per year. The density of gully dissection is up to 0.5 km/km<sup>2</sup> of area, and the density of the entire erosional dissection reaches 2 km/km<sup>2</sup>.

In the Chuvash Republic, there is a fairly high density of rural settlements (almost 10 per 100 km<sup>2</sup>) and the share of the rural population in the population of the region (36.3%). According to the latter indicator, it ranks 19th among the constituent entities of the Russian Federation (average for Russia is 25.3%), and 3rd (after the Orenburg region and the Republic of Bashkortostan) in the Volga Federal District. However, it is not possible to classify Chuvashia as an agrarian and even agro-industrial region, because only 8.2% of GRP is produced in agriculture and forestry, hunting, fishing and fish farming, while the manufacturing industry creates 25% of GRP, and various service industries up to 55% in total.

We can see a similar picture in the field of employment. Of the 567.7 thousand people who are employed in the production of goods and services, 18% are employed in industry, 15.6% in construction, 13.6% in retail trade, while only 8.7%. The education and healthcare systems of the republic are in no way inferior to agriculture in terms of providing jobs for the economically active population (8.9% and 7.4%, respectively).

As of January 1, 2021, 532 enterprises and organizations declared their focus on agricultural production, which is 2.4% of the total number of enterprises registered in Chuvashia. According to 2021 Agricultural Micro-Census on average, one agricultural organization accounts for 1.268 thousand hectares. (65th place among the constituent entities of the Russian Federation and the last in the Volga Federal District). Agricultural producers of the republic in 2020 produced products worth 44.8 billion rubles (22.9 billion crop products and 21.9 livestock products). The industrial enterprises of Chuvashia are more than five times larger. The volume of agricultural production of the republic amounted to 0.7% of all-Russian production and 3% of production in the Volga Federal District. In terms of gross agricultural production, Chuvashia ranked 47th in Russia and penultimate in the Volga Federal District. Agricultural organizations and households, the former account for 48.1%, the latter 37.3% of the total production volume, primarily produce crop and livestock products. Peasant (farmer) farms of Chuvashia give only 14.6% of production.

550.2 thousand hectares were sown in 2020, 56.5% of the sown area was cultivated by agricultural organizations, 29.6% by peasant (farmer) households, 13.9% by households. Basically, the sown areas were allocated for grain crops (293.3 thousand hectares, sowed with spring barley (97.8 thousand hectares), spring wheat (86.4 thousand hectares) and winter wheat (73.3 thousand hectares) and fodder crops (214.8 thousand hectares. Industrial crops, potatoes and melons and gourds were occupied only 42.1 thousand hectares. At the end of the year, 940.5 thousand tons of grain and 157.2 thousand tons of vegetables. In the all-Russian production of grain and leguminous crops, the share of Chuvashia was 0.7%,

potato production - 1.7%, vegetables - 1.1%, respectively, in the Volga Federal District 2.9%, 6.5% and 5.9%.

In various farms of Chuvashia, by the end of 2020, there were 196.9 thousand heads of cattle, 132 thousand pigs, 160.2 thousand sheep and goats. Cattle (55.6%, 60.9% cows), sheep and goats (95%) are mainly kept in households, and pigs in agricultural organizations (78.3%). The republic produced 439.1 thousand tons of milk (1.4% of the total Russian production and 4.3% of the production of the Volga Federal District), 294.9 million eggs (0.67% of the total Russian production), 38.7 thousand tons of meat poultry (0.77%), 20.9 thousand tons of pork (0.49%), 15.5 thousand tons of cattle in slaughter weight (0.95%).

The only type of agricultural production, in which Chuvashia currently has no equal in the Russian Federation, is the production of hops. In 2020, 185.1 tons of hops were produced in the region, which is about 90% of the total Russian production.

Another group of enterprises that are included in the agro-industrial complex are enterprises that process agricultural products - food industry enterprises. There were 236 of them in the Chuvash Republic as of January 1, 2021. In 2020, they produced (shipped) products, works and services in the amount of 35.7 billion rubles, 16.1% of the total volume of the manufacturing industry.

The main structure-forming branches of the Chuvash food industry are baking, flour-grinding, meat processing, milk processing, confectionery, brewing and alcoholic beverages. The absolute leader in flour-and-cereal production is Chuvashkhleboprodukt, which combines Cheboksary and Kanashsky elevators, Vurnarsky, Urmarsky, Shumerlinsky and Tyurleminsky grain-receiving enterprises. In the bakery production of the republic, bakeries (bakery plants) dominate (three in Cheboksary, two in Kanash, one each in Shumerla and Alatyr). The largest meat processing enterprise of the republic remains «Vurnar Meat Processing Plant». In the milk processing industry, Yadrinmoloko occupies the first place. Among the dairy enterprises of the republic, it is the leader in terms of cash receipts and the number of employees. The company positions itself as the largest in the Volga Federal District. However, according to the published rating of the Dairy Market Research Center (DIA) for 2018, although it entered the top 100 dairy plants in Russia in terms of processed milk, it took only 96th place (having processed 52,375 tons). The leading places were taken by a number of enterprises from other regions of the Volga Federal District and the Novochurashevsky Dairy Plant operating in Chuvashia, which processed 67,550 tons of milk and took 67th place in the ranking. In the confectionery industry, the undoubted leader is the Akkond confectionery factory, in brewing - Buket Chuvashiya. Buket Chuvashiya is among the top 20 Russian brewing companies in terms of revenue in 2020, and ranks 15th in the ranking (revenue is more than 30 times less than that of the leaders in the rating of companies Ab Inbev Efes and Baltika).

Chuvashia produced in 2019: 65.9 thousand tons (1.18% of the total Russian production of non-durable bakery products, more than 8 thousand tons of sausages (0.35%), 5.7 thousand tons of meat and meat-containing semi-finished products (0.16%), 40.4 thousand tons of milk (0.76%), 10.9 thousand tons of kefir, 1.6 thousand tons of fermented baked milk and varenets, 3.8 thousand tons of sour cream, 9.2 thousand tons of cottage cheese and cheese and 4 thousand tons of butter (1.48%).

The largest agricultural enterprises and enterprises of the food industry of Chuvashia, as a rule, are inferior in terms of cash receipts from the sale of their products to enterprises that are leaders in other sectors of the manufacturing industry of the republic (electrical, instrument-making, chemical, tractor-building, etc.). Agricultural enterprises especially lose in terms of cash receipts. The only exception is the Akkond confectionery factory, which surpasses most of the region's machine-building enterprises in this indicator. However, in terms of generated net profit, agricultural enterprises and food industry enterprises are

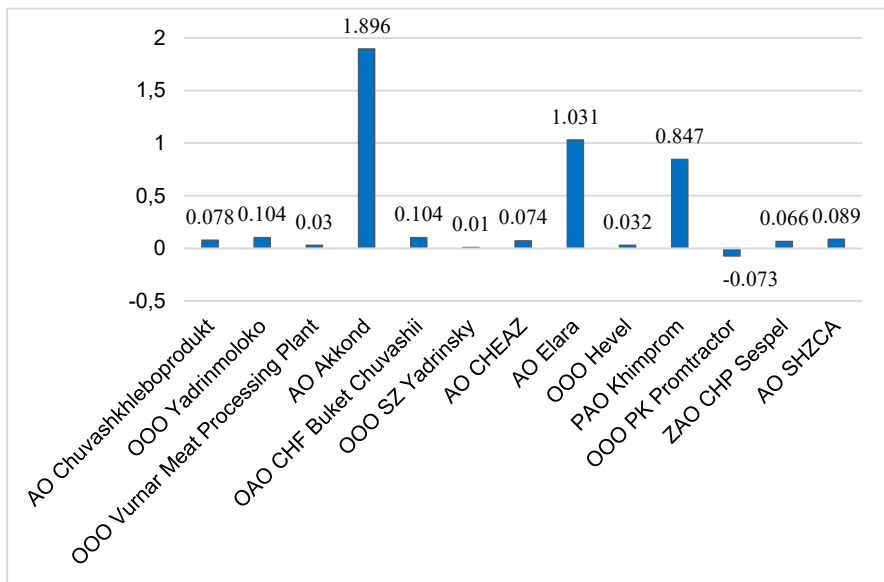
either in no way inferior to other significant processing enterprises of the republic, or even surpass them (Akkond or the Morgaushskaya poultry farm).

A number of successful specialized enterprises in the food industry of the republic not only created their own trade networks, tried to diversify production by entering new markets for food products, but also organized agricultural production under their control.

The Akkond confectionery company created Akkond-Khleb (production of bread and flour confectionery in the city of Kanash), Akkondmoloko (production of milk and dairy products in the village of Yantikovo, Yantikovsky district) and the AkkondAgro Firm dairy farm (village of Yantikovo, about 2 thousand head of dairy herd and fodder cultivation). The last two enterprises formed the largest full-cycle dairy complex in Chuvashia. The Vurnar Meat Processing Plant also built an agricultural holding around itself, creating not only a trading network, but also a number of agricultural productions (a pig complex, a livestock complex). Some successful agricultural enterprises have created their own processing industry and distribution networks. However, in Chuvashia, in the construction of vertically integrated companies, processing enterprises were more successful than agricultural enterprises (compare AO Akkond and OAO Yurma (see Figure 1)).

For the chemicalization of agricultural production in Chuvashia, the Vurnar Plant of Mixed Preparations (a branch of ZAO Firma Avgust) is working. The company claims to be Russia's largest and most specialized plant protection chemical and pesticide manufacturer. AO «EFEMSI Volga», created jointly by PAO «Khimprom» and one of the world's largest American chemical company «DuPont».

Relatively small Tehma-Agromash specialize in agricultural engineering (the average number of employees is 57 people, produces trailed agricultural machines, is part of the Tekhmashholding group of companies) and OOO Volzhsky Combine Plant (formerly «Krasnoyarsk combine harvester plant», average number of employees 82 people, founder of OOO Concern Tractor Plants). Both companies are in a difficult position. They have not brought income to their owners for more than a year. According to the results of 2020, Tekhma-Agromash showed a loss of 1.5 million rubles, OOO Volzhsky Combine Plant - a loss of 51 million rubles.



**Fig. 1.** Profit and Loss Account (total financial result) of manufacturing enterprises (billion rubles, 2020).

Personnel for the agro-industrial complex of Chuvashia are trained by secondary vocational and higher educational institutions of the republic. Among the institutions of secondary vocational education, the training of specialized personnel for agriculture (in the field of «Agriculture and Agricultural Sciences») was preserved by the Batyrevsk Agro-Industrial College, the Vurnar Agricultural College, the Mariinsky Posad Technological College, the Yadrinsky Agrotechnical College, the Tsvilsky Agrarian Technological College, the Cheboksary College of Transport and building technologies. Also, according to the programs of secondary vocational education, personnel for agriculture are trained in the Mariinsko-Posad branch of the Volga State Technological University. The reduced contingent of students of secondary vocational education studying in the field of «Agriculture and Agricultural Sciences» in the region is 990.9 people, which is only 3.7% of the total reduced contingent of students of secondary vocational education in the Chuvash Republic (2021). Technical sciences (49.4% of students), social sciences (26.8%), and medicine (11.2%) are more popular with applicants from secondary vocational schools. If we consider each of the listed institutions of secondary vocational education (according to Monitoring (SPO)), then in none of them the reduced contingent of students studying agriculture will exceed 50% of the total reduced contingent of students studying at the educational institution.

«Chuvash State Agrarian University» is the only educational institution of the Chuvash Republic, which trains personnel with higher education in the areas of training of the field "Agriculture and agricultural sciences" (agronomists, veterinarians, livestock specialists). The reduced contingent of students is 1293.9, which is 69.2% of the total reduced contingent studying at the university. According to Monitoring (VO) of the total reduced contingent of students studying undergraduate, specialist, master's programs in higher educational institutions of the republic (10 universities, 4 head and 6 branches), students in agricultural sciences make up only 6.7%.

«Chuvash State Agrarian University» is also a significant scientific agricultural center of the Chuvash Republic. It employs more than 260 people with academic degrees (86% of the teaching staff). In 2020, the employees of the organization published 983 articles per 100 scientific and pedagogical workers (including those indexed in the information and analytical system of scientific citation Web of Science Core Collection - 22.4 per 100 PNR, Scopus - 62.1), completed research and development work in the amount of 19.4 million rubles. The Agricultural University has two dissertation councils: D 220.070.01 accepts for defense dissertations on technology, mechanization, electrical technology and electrical equipment in agriculture; D 220.070.02 - on veterinary sanitation, ecology, zoohygiene, veterinary and sanitary examination, private animal husbandry, livestock production technology.

A specialized scientific center that deals with the problems of agriculture in Chuvashia is the Chuvash Research Institute of Agriculture, a branch of the Federal State Budgetary Scientific Institution of the Federal State Budgetary Scientific Institution of the North-East. It conducts research work on the development of adaptive breeding and agrobiotechnologies, the development of new combined technologies for the deep processing of crop products for fodder, food, medicinal and technical purposes, as well as the management of the production process of agricultural plants, taking into account the ecological and natural and economic features of the North East of the European part of Russia, development of a strategy for the agricultural development of the northern territories of the European part of the Russian Federation on the basis of rational environmental management and mobilization of the adaptive potential of plants. The institute employs 56 people, research workers and support staff - 30 people (only 3 of them have a Ph.D. degree). Also, scientific research related to agriculture is carried out in the

Cheboksary branch of the Main Botanical Garden named after N.V. Tsitsin of the Russian Academy of Sciences (one of the main areas of research activity is the introduction and acclimatization of plants in the conditions of the Middle Volga region). Also, research is being carried out at a number of both agricultural enterprises of Chuvashia (for example, at the collective farm "Experimental and demonstrative farm «Leninskaya Iskra» of the Yadrinsky district for landscape-adaptive agriculture), and enterprises of the industrial sector of the agro-industrial complex of the republic. In the latter, science accompanies and also ensures the production process.

Sales of products of agricultural enterprises of the Chuvash Republic are primarily focused on intra-regional and domestic consumers. However, a number of manufacturers seek to enter the international market. Chuvashia took part in the federal project «Export of agricultural products». According to plans, by 2024, the export of products of the republican agro-industrial complex should reach the volume of 38.7 million US dollars. However, already at the end of 2020, the values of export volumes approached the planned figures for 2024. Agro-industrial complex enterprises exported products worth 37 million US dollars. However, the leaders in agro-industrial exports were not agricultural producers, but processing enterprises, and primarily Chuvash confectioners (including the same AKKOND), confectionery products accounted for 64% of the volume of exports of agricultural products, exports of grain crops provided only 2% of exports, oilseeds - 8%. Products were exported to 37 countries of the world (Chuvash confectioners have the most extensive export geography). Exports to China are especially significant, accounting for 56% of the total volume (confectionery, poultry, dairy products, potatoes). Much smaller flows went to Germany (9% of export volume, confectionery, buckwheat, flax seeds), Kazakhstan (6%, confectionery, potatoes, barley, hop cones), Ukraine (5%, confectionery, potatoes), Poland (4%, confectionery, buckwheat, flax seeds). Despite the successes, in the total volume of exports of products of the Chuvash Republic in 2020, the share of agricultural products was only 14.8%, and in the total exports of agricultural products of the Russian Federation, the share of producers from Chuvashia was 0.12%. Things are better in confectionery exports, here the share of producers from Chuvashia is almost 2%.

## **4 Discussion**

Currently, the agro-industrial complex in the Chuvash Republic is represented by almost all industries that are usually included in this complex. The republic has not only agricultural production, but also the food industry, agrochemical production and agricultural engineering. In Chuvashia, a system of training personnel for agriculture is developed, scientific centers operate. Despite the fact that in terms of the ability to generate large cash flows from the sale of their products and services, leading agricultural producers and food industry enterprises, as a rule, are significantly inferior to the leading enterprises of the electrical engineering, instrument-making industry, industrial tractor building, and large-tonnage chemistry. The former are often superior to the latter in terms of their ability to create net profits.

However, the development of individual branches of the agro-industrial complex of the Chuvash Republic is characterized by unevenness. Specialized agricultural engineering is of little importance and is in a deep crisis; in the near future it may disappear completely as a result of the bankruptcy and liquidation of a few enterprises. The hope for the preservation and development of agricultural engineering in the region gives rise to the need to replace the import of agricultural machinery. Agricultural chemical production is flourishing, but one-sided, focused on the production of plant protection products, while there is no fertilizer production in the region. Agricultural science, agricultural education and agricultural production are organizationally separated, which is an unacceptable luxury



for a small region. Agricultural secondary vocational and higher education are not in great demand in the market of educational services. The natural conditions and resources of Chuvashia do not create significantly favorable conditions for the development of agriculture in the region. Large regional and inter-regional agro- and agro-industrial holdings operate on the territory of the Chuvash Republic, but in the production of both livestock and crop products, the importance of household, horticultural farms of the population is too high. In the all-Russian production of certain types of agricultural products, which agricultural producers of Chuvashia are oriented towards, the republican values often do not reach 1%. A similar situation is observed in the production of meat and dairy products. A slightly better picture for confectioners and brewers of the republic.

The only type of agricultural production in which Chuvashia currently has no competitors in the Russian Federation is the production of hops. This, in the context of sanctions that caused difficulties in transport logistics and cash flow logistics, makes it possible for the republic's farmers to expand production and take a more significant place in the Russian hop-growing products market. Also interesting is the project for the revival of hemp growing. Such existing enterprises as the Mariinsko-Posadsky Butter Plant, the Alatyr Paper Factory and the Cheboksary Tape Weaving Factory could take part in the processing of products after the reconstruction. The introduction of biogas technologies in the agro-industrial production of the republic also has prospects [20, 21]. The construction and operation of biogas stations as part of large livestock and crop production and processing complexes will reduce the severity of biological waste disposal, replace all or part of the purchased thermal and/or electric energy, complex fertilizers [22, 23]. A special effect can be produced by the creation of not cooperative (those who build their work on the cluster principle), but combined agro-industrial-energy-chemical industries [24].

There is no doubt that the modern agro-industrial complex of the Chuvash Republic is of great importance for the socio-economic development of the region. However, the natural and climatic conditions of the region, although they do not create significant obstacles to the development of agriculture, and even more so the agro-industrial complex as a whole, do not provide any great advantages. Despite the rather high density of rural settlements and the share of the rural population in the population of the region, it is not possible to classify Chuvashia as an agrarian and even agro-industrial region, since only 8.2% of GRP is produced in agriculture and forestry, hunting, fishing and fish farming, while the manufacturing industry creates 25% of the GRP, and various service industries together up to 55%. We can see a similar picture in the field of employment. The education and healthcare systems of the republic are not inferior to agriculture in providing jobs for the economically active population. Therefore, at present it is impossible to talk about the agrarian or agro-industrial orientation of the economy of Chuvashia, and, accordingly, about Chuvashia, as an agrarian or agro-industrial region. And because of the relative weakness of the agrarian and agro-industrial sectors of the republic against the background of a number of other regions of Russia, and because of the significantly lower importance of the agrarian and even agro-industrial sector of the republic in comparison with the manufacturing industry, construction and services of Chuvashia.

## **5 Conclusion**

The modern agro-industrial complex of the Chuvash Republic is of great importance for the socio-economic development of the region, and over time this value may even increase. However, not at the present time (and most likely in the future) it will be impossible to talk about the agrarian or agro-industrial orientation of the economy of Chuvashia. For the same reason, one cannot speak of Chuvashia as an agrarian or agro-industrial region, not only because of the relative weakness of the agrarian and agro-industrial sectors of the republic

against the background of a number of other regions of Russia, but also because of the significantly lesser importance of the agrarian and even agro-industrial sector of the republic in comparison with services, manufacturing and construction in Chuvashia.

In the plans for the development of the Chuvash Republic, the manufacturing industry and production, especially transport infrastructure, should be seen as the engine of the region's economy. Agro-industrial production, especially agricultural production, should play a very significant, but still secondary role. Without forgetting about ensuring food security, the agrarians of the republic need to find that area of activity in agro-industrial production, that specialization that would distinguish them from the background of other regions of Russia.

Today, in a period of monetary and logistical difficulties in cooperation with foreign economic partners, opportunities are opening up for the Chuvash Republic to create (on the basis of the brewing industry, grain and malt production already established in the region, using its unconditional leadership (including scientific) in Russian hop growing) territorial-production agro-industrial cluster (complex), covering all floors of the brewing industry, from the cultivation of grain malt crops and hops, to the production of beer. The cluster should unite agrarians (manufacturers of grain malt crops and hops), scientists (including hop growers), specialized institutions of vocational education, machine builders (manufacturers of equipment for hop growing (it is possible to develop on the basis of Tekhma-Agromash LLC and Volzhsky Combine Plant LLC)), chemical enterprises of the region (manufacturing plant protection products), hop processors, malt producers, and brewers. , agro-brewery tourism.

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