

The current state of world agriculture and trends in its development

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Abstract: *Agriculture is the most important branch of the world economy. The industry is one of the most important, it is represented in almost all countries. More than 1 billion of the economically active population is employed in world agriculture. In this regard, the article presents an analysis of the current state of world agriculture in the context of regions and trends in its development. The problems of agricultural development in the world economy, as well as the ways of their solution are considered.*

Key Words: *agriculture, agricultural products, crops, livestock, food, developed countries, developing countries, world economy*

1. INTRODUCTION:

Agriculture is one of the priority sectors of international cooperation, since in most countries it plays an important role in the formation of the economy as a whole and interaction with other farms in other countries.

The development of the world economy at the present stage is indicated by the involvement of the absolute majority of states in the international division of labor and going beyond the framework of domestic competition to the international level. Agriculture is one of the most promising branches of international cooperation, since the functioning of any of the world's farms is unthinkable completely isolated from the farms and economies of other countries.

At the moment, agricultural production is characterized by both innovative methods in traditional spheres (animal husbandry, crop production) and in the latest, production of other necessary products. The latest technologies have completely changed the nature of agricultural production and all related industries; it has entered a phase of innovative, rapid development. The world agriculture has passed a long evolutionary path - eleven thousand years in order to isolate and domesticate plants and animals of the wild. The twentieth century has brought a particularly strong shift in this industry, including such important advances as the use of synthetic fertilizers, pesticides, breeding and GMOs. The combination of these innovations has significantly influenced the transformation of the world and the acquisition of a modern look by the world economy.

The relevance of this work is determined by a number of factors. Agriculture is not only the oldest and most dependent on natural conditions branch of the economy, but also the way of life of the majority of the world's population; it is the most extensive vital branch of the economy that determines the standard of living of people.

Agriculture is a donor for other sectors of the economy, a source of replenishment of the national income for solving urgent problems of the country. The main economic proportions and the growth of the economy of the entire country largely depend on the state and rate of development of agriculture.

Under these conditions, the study of further trends in the development of world agriculture, in which half of the world's population is currently employed, becomes more urgent.

2. ANALYSIS AND RESULTS:

Agriculture is not only an important branch of the world economy, but also a way of life for most of the world's population. Global agriculture employs 30% of the economically active population, while in Asia and Africa more than 60%, in South America and Oceania - about 19, in Europe and North America - 9-10%. The main function of the industry is to provide the world's population with food. An increasing part of agricultural products comes to consumers after industrial processing. Agriculture supplies raw materials for the light and food industries. New spheres of consumption of agricultural products have appeared, especially those that are rich in carbohydrates (sugar cane, sugar beets, corn, sorghum, potatoes, etc.). It is used to produce ethanol, which is used to replace or increase the octane rating of gasoline.

During 2000-2018. agriculture in the world increased by 2254 billion dollars. or 3 times to 3363 billion dollars; the change was due to an increase in the world's population, as well as an increase in agriculture per capita in the world by \$ 260. The average annual growth of agriculture in the world was 2.9%. The world's smallest agriculture was in 2001

(\$ 1099 billion). The largest agriculture in the world was in 2018 (\$ 3363 billion), consisted of agriculture in China (30.4%), India (12.1%), USA (5%), Indonesia (4%), Nigeria (2.7%). (Table 1).

During 2000-2018. agriculture per capita in the world increased by \$ 260 or 2.4 times to \$ 440.7.

The main link in the agro-industrial complex is considered to be agriculture, which provides about 1/2 of the products of the agro-industrial complex, which concentrated 2/3 of its basic production assets and labor. Agriculture is considered the second leading branch of material production, which employs from 2 to 43% of the economically active population. Based on two criteria - the share of employed in the industry and the share of agricultural products in GDP - one can judge the level of development of the country's economy (Table 2).

Table 1
 Agriculture of the world, 2000-2018¹

Year	Agricultural production in the world, billions of dollars	Growth in agricultural production in the world, %	Agricultural production per capita, dollars	The share of agriculture in the economy, %
2000	1109	2,9	180,7	3,5
2001	1099	2,0	176,7	3,4
2002	1136	2,0	180,2	3,4
2003	1271	3,2	199,3	3,4
2004	1458	4,5	225,7	3,5
2005	1514	3,4	231,5	3,4
2006	1634	3,3	246,8	3,3
2007	1950	2,2	290,8	3,5
2008	2257	3,6	332,5	3,7
2009	2197	2,3	319,6	3,8
2010	2547	2,3	366,1	4,1
2011	2964	3,8	420,9	4,2
2012	3055	1,7	428,7	4,3
2013	3252	4,8	451,0	4,4
2014	3311	2,9	453,7	4,4
2015	3162	2,4	428,4	4,4
2016	3154	2,4	422,5	4,3
2017	3309	3,4	438,3	4,3
2018	3363	2,1	440,7	4,1

In fig. 1 shows the share of regions in agriculture in the world in 2018. As can be seen from the figure, the largest share is occupied by Asian countries - 62.9%, and the smallest Oceania - 1.6%. Developing countries are more likely than developed countries to rely on agriculture as a larger percentage of GDP. In general, the share of agriculture in total GDP is highest in Africa and South Asia.

Fig. 2 represent the share of the world's leading countries in agriculture in 2018. The largest share is occupied by China - 30.4%, India - 12.1%, USA - 5%.

The main factor of production in agriculture is land, which, unlike other means of production, is not a product of human labor. With rational use in agriculture, the land not only does not lose its qualities, but also improves them, and all other means of production are gradually morally and physically obsolete and replaced by others. Consequently, the land can act in this case both as an object of labor and as a means of labor.

An important feature, indicating the reached limit of development of land suitable for agriculture, is a slight change in the areas occupied by various types of agricultural production.

Table 2

¹ http://www.be5.biz/makroekonomika/agriculture/agriculture_world.html

World agricultural development indicators (2017-2018)²

Country	The number of people employed in agriculture (% of the total)	Agriculture as a source of GDP (% of total)
USA	2	0,9
Canada	3	1,7
Japan	5	1,2
France	2	1,6
Italy	5	1,9
Poland	18	2,1
Australia	4	2,5
Russia	10	3,1
Brazil	20	4,4
Egypt	27	11,2
Indonesia	43	12,8
Uzbekistan	27	28,1

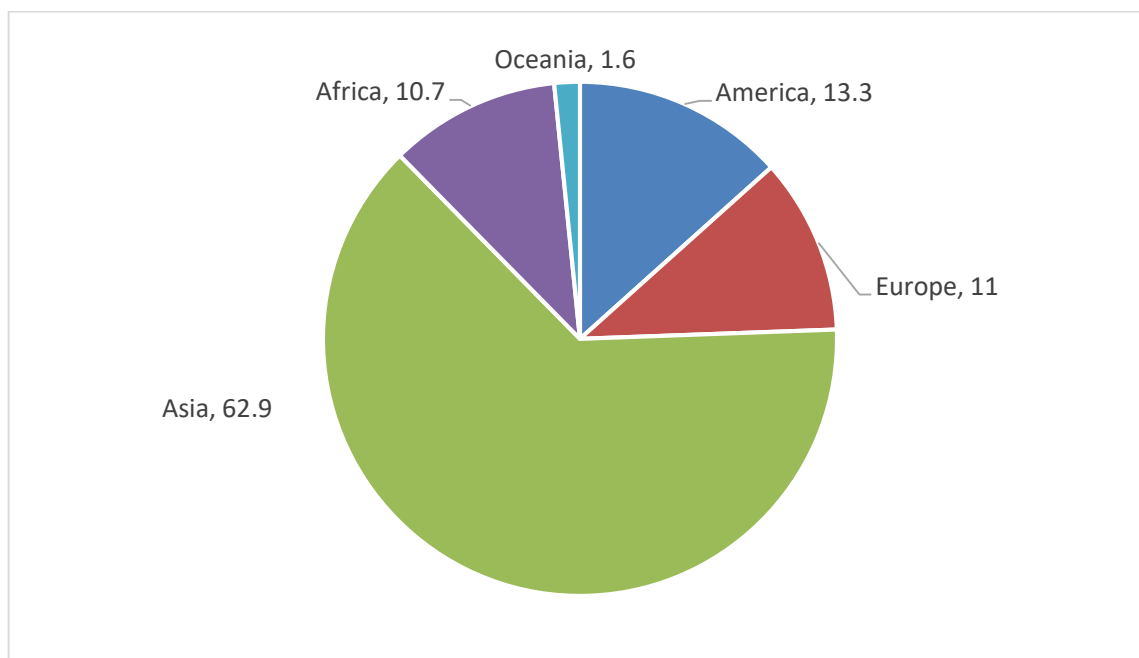


Fig. 1. Share of regions in agriculture in the world, %, 2018³

One of the features of the development of world agriculture should be noted a sharp disproportion in the location of the main agricultural producing regions and regions of consumption. This explains the need and importance of involving the constituent parts of the agro-industrial complex in the system of the international division of labor.

The main factors in the location and specialization of agriculture are the following:

1. Natural, which are mainly associated with the quality of soil, the seasonal nature of agriculture, the amount of precipitation, the availability of water resources, the topographic conditions of the area, the level of development of productive forces in agriculture, etc.
2. Socio-economic - the availability of labor resources and the degree of their qualifications, the presence of processing enterprises, the degree of development of transport infrastructure, proximity to agglomerated zones, etc.
3. Scientific and technological progress, which contributes to a significant increase in the efficiency of agricultural production.
4. State regulation. This factor is typical only for developed countries, in which the state influences the placement and specialization of agriculture due to economic methods of influence: support for prices for agricultural products, lending to agricultural enterprises, etc.

² <https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS>; <http://www.be5.biz/makroekonomika/index.html>

³ http://www.be5.biz/makroekonomika/agriculture/agriculture_world.html

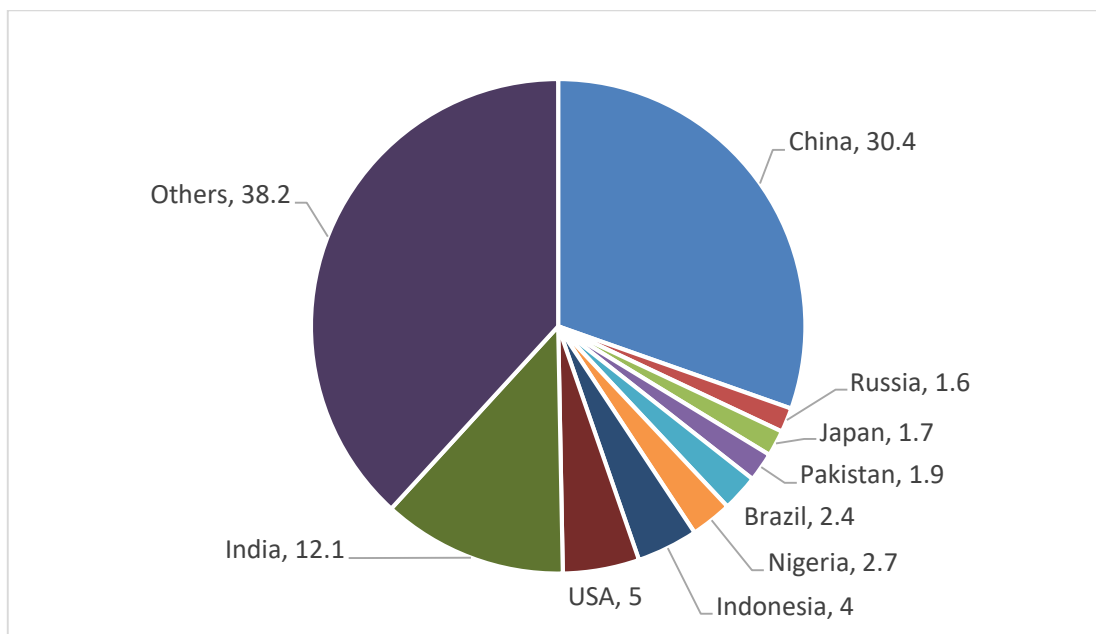


Fig. 2. Shares of leading countries in agriculture in 2018, %⁴

Based on the above factors, as well as taking into account the specifics of agriculture as an industry, it is possible to single out the countries with the greatest and least dependence on agriculture (Table 3).

Comparison of agriculture in developed and developing countries allows us to draw conclusions that:

1. In developed countries, commercial agriculture prevails (production of products for sale) and the achievements of scientific and technological revolution are widely introduced. In countries with developed economies, the agro-industrial complex has been formed - a system of enterprises engaged in the production of agricultural products, their processing, storage, transportation and marketing, as well as the production of equipment and fertilizers. Agribusiness was formed on the basis of the agro-industrial complex.

2. In developing countries, in contrast to developed ones, small-scale farming prevails, mainly in crop production, barely providing food for the family. The implementation of the achievements of scientific and technological revolution in the agriculture of developing countries is difficult because of the poverty of the population and the lower level of economic development of these countries. The most advanced technologies are concentrated in developed countries.

In each country, the agricultural sector lends itself to intense influence and control by the state and is one of the leading directions of economic policy. The market economy is most suitable for farming, since agricultural producers are entrepreneurs of a kind. The work of individual farmers in the agricultural sector of Western Europe and North America, together with the positive trend of the agrarian business - the industries supplying inputs for agriculture, and the industries that process and distribute food - have created an expanded offer that is beneficial to end consumers.

The development of the world economy at the present stage is indicated by the involvement of the absolute majority of states in the international division of labor and going beyond the framework of domestic competition to the international level. Agriculture is one of the most promising branches of international cooperation, since the functioning of any of the world's farms is unthinkable completely isolated from the farms and economies of other countries.

FAO experts note that 78% of the earth's surface is experiencing serious natural restrictions for the development of agriculture, 13% of the territories are characterized by low productivity, 6% on average and 3% high. Currently, about 11% of all land is plowed, another 24% is used for grazing. The specifics of the situation with agricultural resources and the specialization of agriculture differ significantly depending on the region.

Modern agriculture in developing countries is characterized by: scientific breeding, breeding of high-yielding hybrid varieties of cereals, which served as a factor in the growth of agricultural production in a number of developing countries. Of course, this process was also influenced by other factors of the "green revolution": an increase in the use of fertilizers, an increase in mechanization, an increase in the number of highly qualified personnel, etc. However, these processes took place only partly in the countries that took part in this so-called "green revolution".

Table 3

**Economic dependence of countries on agriculture
 (% of GDP from agriculture)⁵**

⁴ <http://be5.biz/makroekonomika/agriculture/world.html#reg2>

⁵ http://www.be5.biz/makroekonomika/agriculture/agriculture_world.html

Countries with the greatest economic dependence on agriculture					
Guinea-Bissau	62,6	Ghana	37,9	Albania	24,7
CAR	55,6	Benin	36,9	Tajikistan	24,2
Burundi	51,5	Kyrgyzstan	36,6	Armenia	23,4
Ethiopia	46,9	Mali	35,6	Syria	23,0
Laos	46,8	Cambodia	32,9	Guatemala	22,5
Tanzania	44,8	Gambia	32,0	Pakistan	22,4
Cameroon	44,2	Burkina Faso	30,8	Cote d'Ivoire	22,1
Togo	41,2	Madagascar	28,8	Vietnam	21,8
Rwanda	40,5	Haiti	27,4	Mozambique	21,6
Nepal	40,3	Paraguay	27,2	Moldova	21,3
Sudan	39,3	Kenya	26,8	India	21,1
Malawi	39,1	Guinea	24,9		
Countries with the least economic dependence on agriculture					
Singapore	0,1	Austria	1,9	Finland	3,2
Luxembourg	0,6	Oman	1,9	Australia	3,4
Trinidad and Tobago	0,9	Canada	2,2	Poland	3,4
Great Britain	1,0	Denmark	2,3	South Africa	3,4
Germany	1,1	Netherlands	2,4	Spain	3,5
USA	1,2	France	2,5	Slovakia	3,6
Japan	1,3	Botswana	2,6	Portugal	3,7
Belgium	1,4	Italy	2,6	Finland	3,2
Switzerland	1,4	Ireland	0 7	South Korea	3,7
Norway	1,6	UAE	2,7	Chile	3,8
Taiwan	1,7	Jordan	2,8	Estonia	4,3

The underdevelopment of agricultural relations in developing countries is the key reason for the emerging difficulties in the development of agriculture. In many countries of Africa and Asia, parallel to the powerful lands of local and foreign capital, farms of the feudal and semi-feudal type are widespread.

The agrarian sector in developing countries does not cope with the needs of the population for food. At the moment, for a large percentage of the population, food is in short supply. And despite the fact that the number of people suffering from hunger is declining, according to various sources, their number on Earth represents more than 1 billion people. Nutritional deficiencies in developing countries alone kill about 20 million people each year⁶.

This tense agricultural environment and the difficulty of covering up food shortages pose a food security challenge for many developing countries. In 2017, 24 countries had a very low level of food security, of which 22 are African. A necessary method to reduce the food problem is humanitarian aid. The main channels for food aid go to the least developed countries in Asia, Africa and South America. The main suppliers are the USA and the EU.

First of all, it is necessary to characterize the general features inherent in the modern stage of agricultural development in developing countries.

Scientific selection, the creation of high-yielding hybrid varieties of grain have led to an increase in agricultural production in a number of developing countries. This was also facilitated by other factors of the "green revolution" (a certain increase in the use of fertilizers, the expansion of irrigation works, an increase in mechanization, an increase in the qualifications of a part of the employed labor force, etc.). But they covered only a small part of the territory of the states that participated in the "green revolution".

The main reason for the difficulties of these countries in the development of agriculture is the backwardness of their agrarian relations. Thus, a number of Latin American states are characterized by latifundia - extensive private land holdings that form the basis of landlord-type farms. In most countries of Asia and Africa, along with large farms belonging to local and foreign capital, farms of the feudal and semi-feudal type are widespread, in a number of countries even with remnants of tribal relations. In this regard, communal land tenure, which has its roots in ancient times, deserves special mention.

The motley and backward character of agrarian relations is combined with vestiges in the organization of society, the enormous influence of the institution of tribal and intertribal leaders, the widespread dissemination of animism and other diverse beliefs. It is necessary to take into account many social and psychological characteristics of the local

⁶ FAO Statistical Yearbooks: World food and agriculture [Electronic resource]. 2015. Access mode: <http://www.fao.org/economic/ess/ess-publications/ess-yearbook/en/#.WHaTMIWLTDd>

population, in particular the widespread consumption, unproductive mentality. Remnants of the colonial past of many of these states also have an effect.

The peculiarities of the agrarian system and other factors have led to the fact that the agriculture of many developing countries cannot meet their food needs. Until now, the proportion of the population that does not receive the necessary nutrition remains very large.

Although the absolute and relative numbers of people suffering from malnutrition have declined, the total number of hungry people remains huge. According to various estimates, their number in the world is about 1 billion people. Malnutrition alone in developing countries kills 20 million every year.

Traditional diets in a number of countries do not contain enough calories and often do not have the required amount of protein and fat. These tendencies are especially acute in the countries of South and East Asia.

The difficult situation with agricultural development and the difficulties in food security pose a problem of food security for many developing countries. The latter refers to the constant consumption of a sufficient amount of food to maintain the active life of people. Experts from the UN specialized organization FAO believe that the minimum level for ensuring food security is world reserves from the previous harvest equal to 17% of world consumption or sufficient to meet needs for about two months.

The calculations of UN experts have shown that a significant part of the developing countries has a very low coefficient of self-sufficiency. 24 states had a very low level of food security, of which 22 were African. The aggravation of the situation in a number of developing countries has necessitated the adoption of measures aimed at alleviating the food problem. Food aid, that is, the transfer of resources on terms of concessional loans or in the form of gratuitous gifts, has been an important tool to reduce the problem of hunger.

The main supply of food aid goes to the least developed countries in Africa, Asia and Latin America. The main supplier is the United States. In recent years, the role of EU countries has increased, especially in relation to the least developed African and Asian states.

It should be noted that in the XX century, agricultural production, in general, increased intensively, as a result of this, the ecological environment of the countryside deteriorated. The primary cause of environmental eutrophication is the use of pesticides in the agricultural sector. When used on land, 10 to 30% of pesticides have a negative impact on surrounding ecosystems through food webs. For air application, this figure can be from 50 to 75%.

The next environmental problem is genetically modified organisms (GMOs). The volume of the market for transgenic products is \$ 44 billion per year. GMOs are produced in 16 countries. The volume of the international organic food market is half the size of transgenic products and the difference between them is growing every year.

It is worth noting that in the course of the growth of prosperity, more countries form organic agriculture, although, thus, it is more expensive to engage in agriculture than traditional agriculture. As of 2017, there are 7.4 million hectares of organic agricultural land in the EU, this figure has a positive annual dynamics of 7%. In comparison with the USA, only a few percent of agricultural products are grown using this technology. The high cost of environmentally friendly products is reflected in its final cost. Therefore, developed countries give subsidies to their farmers for the development of organic agriculture.

3. CONCLUSION:

Experts reasonably state that the spontaneous development of relations in the field of production and consumption is unacceptable. We need coordinated actions and the creation of an international strategy for their formation. In its content, it is possible to distinguish 4 main trends⁷:

First direction: Increasing the land fund. Now an average of about 0.34 hectares of arable land per person is effectively used. But there are reserves for 1 person. there are 4.68 hectares of land in the world. Thanks to these reserves, agricultural areas can be expanded. However, firstly, in any case, the reserves are limited, and secondly, the share of land is little or not at all suitable for agricultural cultivation. In addition, significant costs are required to complete the operation to expand the areas.

Second direction: Expanding economic opportunities by increasing the efficiency of agricultural production. With the introduction of innovative technologies in all areas, agriculture could already provide food for at least 12 billion people. At the same time, the reserves of attainable efficiency can expand further, in part, through the use of various biotechnologies and subsequent progress in the evolution of genetics.

Third direction: Carrying out fundamental and gradual agrarian reforms in developing countries, taking into account the conditions characteristic of each of them. Elimination of the negative consequences caused by the extensive spread of primitive relations in some African countries, latifundism in South America and the disunity of small peasant farms in the Asian states. The improvement of state activity also concerns the sphere of population reproduction, which can be regulated using a variety of means.

⁷ FAO Statistical Yearbooks: World food and agriculture [Electronic resource]. 2015. Access mode: <http://www.fao.org/economic/ess/ess-publications/ess-yearbook/en/#.WHaTMIWLTDd>

Fourth direction: Global cooperation and support from developed countries to less developed ones. The purpose of this cooperation is both to solve the most difficult problems of food shortages and to increase the internal capabilities of developing countries. All this is possible only in integral support for the development of both the economy itself and the educational, health care and other branches of science and culture.

According to the UN forecast, the volume of wheat produced by 2020 will amount to 806 million tons, and in 2050 - 950 million tons. During this period, the population is forecast to increase by about 30-35%. From this it follows that the average per capita grain supply in the wheat segment may slightly increase.

In developing countries, the expected increase in the share of imports in the total consumption of wheat from 24-26% to 30% is characterized by an increase in the use of this cereal in the livestock sector.

The highest production growth rates are expected in underdeveloped countries. Only in this situation will they achieve a decrease in the share of imports from 60% to 50%. Nevertheless, even this level does not satisfy the food security of the countries.

As for the forecasts of development in the field of meat and dairy products, there is a trend that milk production in the world will grow at a faster pace than the increase in population. By 2050, the world milk production is expected to grow to 1,222 million tons. The largest growth is expected in developing countries, which are projected to grow by about 2.25 times. Nevertheless, even in such a long term, the difference in the levels of the state of productivity of dairy farming among developed and developing countries will remain significant.

In developing countries, some reduction in herds of cows can be expected with a significant increase in their productivity. These circumstances will solve two problems: it will increase the production of plant food resources needed by the population, and will increase the percentage of milk protein in the diet of the food strata of the population who are below the poverty line.

The harshest and most difficult problem is the production of meat, which is considered the main condition for improving the livelihood of earthlings. According to forecasts, an increase in the production and consumption of pork is possible - by 77% by 2050, beef - by more than 59%, poultry meat by 2.15 times. The growth rate of meat production has the potential to surpass the growth rate of the world's population. There is a possibility of outstripping expansion of the meat industry in developing countries, which will be ready to cover domestic demand through their own production. In underdeveloped countries, under such conditions, it is predicted that a greater volume of demand for beef and pork will be satisfied through domestic production, while 40% of the demand for poultry meat will be satisfied through imports.

Thus, according to forecasts, by 2050, consumption will increase to the level of 3120 kcal per capita per day, and the growth over a twenty-year period will show 3% or 0.15% per year. Developing countries will increase consumption 5-6 times faster than developed countries. According to these dynamics, the differences in food consumption levels between different countries will gradually decrease. The implementation of these parameters of agricultural production is a super task for international production, taking into account the fact that the introduction of innovations and the latest technologies is associated with colossal costs and risks.

In every country, the agricultural sector is one of the main directions of economic policy, therefore it lends itself to intense influence and control by the state. So, thanks to the verified policy and development priorities in the field of agriculture, the EU countries over a ten-year period have become leaders in the export of agricultural products. According to the forecasts given, it can be assumed that with the transition of the agricultural sector to an innovative, resource-saving way of development, the food problem can be solved within the visible 40-year period.

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