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AIC DEVELOPMENT TRENDS IN KAZAKHSTAN

ҚАЗАҚСТАННЫҢ АӨК ДАМУ ТЕНДЕНЦИЯЛАРЫ

ТЕНДЕНЦИИ РАЗВИТИЯ АПК КАЗАХСТАНА

***D.A. AYBOSYNOVA*[1]**
PhD
***K.A. KIRDASINOVA**[2]**
C.E.Sc.
***E.K. MOLDAKENOVA*[2]**
senior lecturer
[1]At the research center "A.D.A.", Nur-sultan, Kazakhstan
[2]L.N. Gumilvov Eurasian national University, Nur-sultan, Kazakhstan
marso310@mail.ru
***Д.А. АЙБОСЫНОВА*[1]**
PhD
***К.А. КИРДАСИНОВА*[2]**
э.ғ.к..
***Е.К. МОЛДАКЕНОВА*[2]**
аға оқытушы
[1] "A.D.A." ғылыми-зерттеу орталығы», Нұр-Сұлтан, Қазақстан
[2] Л.Н. Гумилев атындағы Еуразия ұлттық университеті, Нұр-Сұлтан, Қазақстан
***Д.А. АЙБОСЫНОВА*[1]**
PhD
***К.А. КИРДАСИНОВА*[2]**
к.э.н..
***Е.К. МОЛДАКЕНОВА*[2]**
старший преподаватель
[1]Научно-исследовательский центр «A.D.A.», Нур-Султан, Казахстан
[2]Евразийский национальный университет им.Л.Н. Гумилева, Нур-Султан, Казахстан

Abstract. At the present stage of development of scientific and technological progress, the role of small business in agricultural sector has increased significantly. Small and medium-sized high-tech farms purchase modern equipment that allows them to produce products at a high technical level at relatively low costs. The intensification of small entrepreneurship in the field of innovation has largely contributed to the emergence of a new form of investment financing for this type of

enterprise - risk capital for innovative firms with a high degree of risk. In terms of costs, the scientific sphere in economically developed countries is significantly ahead of production. The interaction of public and private enterprises in agro-industrial production is one of the important features of the innovation mechanism. Expressing the interests of the largest manufacturers, privately owned companies provide feedback by providing government agencies with information on the effectiveness of measures for business and entrepreneurs, the State economic policy. These areas of activity also played an important role in shaping the modern model of public administration of scientific and technical development of the country: supporting research infrastructures, "knowledge regions", small and medium enterprises, "science in society", and "horizontal" events for the development of international cooperation. Most of these programs focus on innovation development and involve direct budget funding.

Аңдатпа. Ғылыми-техникалық прогресті дамытудың қазіргі кезеңінде аграрлық сектордағы шағын бизнестің рөлі айтарлықтай өсті. Шағын және орта жоғары технологиялық фермерлік шаруашылықтар салыстырмалы төмен шығындар кезінде өнімді жоғары техникалық деңгейде өндіруге мүмкіндік беретін қазіргі заманғы жабдықтарды сатып алады. Инновациялар саласында шағын кәсіпкерлікті жандандыру көп жағдайда кәсіпорындардың осы түрі үшін инвестициялық қаржыландырудың жаңа нысанының - тәуекел дәрежесі жоғары инновациялық фирмалар үшін тәуекелдік капиталдың пайда болуына ықпал етті. Шығындар деңгейі бойынша ғылыми сала экономикалық дамыған елдердегі өндірістік саладан анағұрлым озық. Агроөнеркәсіптік өндірістегі мемлекеттік және жеке кәсіп-орындардың өзара іс-қимылы инновациялық тетіктің маңызды ерекшеліктерінің бірі болып табылады. Ірі өндірушілердің, жеке меншіктегі компаниялардың мүдделерін білдіре отырып, мемлекеттік құрылымдарға бизнес пен кәсіпкерлер үшін шаралардың тиімділігі, мемлекеттің экономикалық саясаты туралы ақпарат бере отырып, кері байланысты қамтамасыз етеді. Қызметтің бұл салалары: зерттеу инфрақұрылымдарын, «білім аймақ-тарын», шағын және орта кәсіпорындарды, «қоғамдағы ғылым», «көлденең» халықаралық ынтымақтастықты дамыту жөніндегі іс-шараларды қолдау сияқты елдің ғылыми-техникалық дамуын мемлекеттік басқарудың қазіргі заманғы моделін қалыптастыруда маңызды роль атқарды. Осы бағдарламалардың көпшілігі инновацияларды дамытуға бағытталған және тікелей бюджеттік қаржыландыруды көздейді.

Аннотация. На современном этапе развития научно-технического прогресса роль малого бизнеса в аграрном секторе значительно возросла. Небольшие и средние высокотехнологичные фермерские хозяйства приобретают современное оборудование, позволяющее производить на высоком техническом уровне продукцию при относительно низких затратах. Активизация малого предпринимательства в сфере инноваций во многом способствовала появлению новой формы инвестиционного финансирования для этого типа предприятий – рискового капитала для инновационных фирм с высокой степенью риска. По уровню издержек научная сфера в экономически развитых странах значительно опережает производственную. Взаимодействие государственных и частных предприятий в агропромышленном производстве является одной из важных особенностей инновационного механизма. Выражая интересы крупнейших производителей, компании, находящиеся в частной собственности, обеспечивают обратную связь, предоставляя государственным структурам информацию об эффективности мер для бизнеса и предпринимателей, экономической политике государства. Эти сферы деятельности также сыграли важную роль в формировании современной модели государственного управления научно-техническим развитием страны: поддержке исследовательских инфраструктур, «регионов знаний», малых и средних предприятий, «науки в обществе», «горизонтальных» мероприятий по развитию международного сотрудничества. Большинство из этих программ направлены на развитие инноваций и предполагают прямое бюджетное финансирование.

Key words: agricultural sector, economic policy, national economy, innovations, investments, international cooperation, transformation, agrochemical processes, agribusiness.

Түйінді сөздер: аграрлық сектор, экономикалық саясат, Ұлттық экономика, инновациялар, инвестициялар, халықаралық ынтымақтастық, трансформация, агрохимиялық процестер, агробизнес.

Ключевые слова: аграрный сектор, экономическая политика, национальная экономика, инновации, инвестиции, международное сотрудничество, трансформация, агрохимические процессы, агробизнес.

Introduction. To date, the course of national economic policy of the Republic of Kazakhstan is aimed at achieving sustainable development of the country through dynamic diversification of industries and rejection of the raw material model of development. In Kazakhstan, as in many developing countries, more attention is paid to the development of agriculture. Thus, Kazakhstan ranks third in the CIS after Russia and Ukraine in grain production. Production of competitive and export-oriented goods, works and services in agriculture is one of the main directions of the state industrial and innovation policy. Therefore, one of the main goals of ensuring innovative development of agriculture is to create favorable conditions for the implementation of innovative projects and R & D aimed at improving the production, economic and other indicators of the agricultural industry.

Domestic agriculture has entered a new era of its development, involving the use of market relations as a priority mechanism for coordinating the activities of economic entities. This is accompanied by radical transformations of all social and industrial relations, restructuring of production, and the formation of qualitatively new processes based on the innovative activities of all economic entities.

Recently, attention has focused on the demand for research and technology, as well as the need to develop innovative systems [1, 2].

Kazakhstan is a promising, actively developing country that currently has a great potential for creating food supply with world-class agricultural products.

Classic indicators of agricultural sector performance include indicators such as the growth rate of the agricultural sector and the overall productivity factor. Increasing agricultural productivity is the main driver of agricultural growth and an important measure of the industry's competitiveness.

Material and methods of research. As theoretical and methodological foundations of the research work were considered the works, statements and research of domestic and foreign scientists on the development of agriculture and the national economy of the Republic of Kazakhstan.

In accordance with the aims of the study, system methods for selecting information, quantitative and qualitative indicators for studying and describing the current situation were used as the selected methodological approaches.

The theoretical propositions were based on the application of general scientific methods and techniques, methods of analysis and synthesis, system and complex approaches. The final data of individual observations from official statistical materials and the information potential of the internet are considered.

The study used an economic and statistical method to analyze and evaluate the current state, the potential of the agricultural sector of the Republic, and it's potential opportunities. Economic assessment was applied to determine the innovative activity of enterprises and the volume of investments in agriculture, forestry, and fisheries, as well as factors that affect the results of the State program for the development of the agro-industrial complex for 2018 and the effectiveness of solving socio-economic problems of implementing innovative projects.

At the present stage, the innovative vector of modernization of agriculture is very important. But in the development of the concept of development of the agricultural sector, it is necessary to correctly place the emphasis, both in the long and in the short term.

Results and their discussion. According to the official data of the statistics Committee, in 2018, internal R&D expenditures increased by 4.8% compared to the previous year and amounted to 72 224 million tenge (figure 1). The share of applied research costs in the total internal costs was 59.9%, research and development-25.4% and basic research-14.7%.

The largest share of sources of financing of internal R&D expenditures is accounted for by enterprises' own funds – 47.4%, the national budget funds – 43.8%, and funds from other sources – 8.8%**.**

The analysis of the organizations' activities showed that the priority area of R&D is research in the field of engineering developments and technologies, the share of which in the total amount of internal R&D expenditures was 49.3%. Expenditures for research in the natural sciences account for 29.2%, research in the agricultural sciences for 11.0%, humanities for 5.3%, medical sciences for 3.0%, and social sciences for 2.2%.

According to the results of 2018, R&D expenditures in the agricultural sector amounted to 7 953.5 million tenge of the total R&D expenditures, including labor costs – 3 214.3 million tenge and the purchase of services (for own projects) – 1 609.3 million tenge. Thus, R&D expenditures in the agri-

cultural sector increased in comparison with the previous year by 21.2%. At the same time, 1,847 research specialists were involved in R&D, including those who have scientific degrees of doctor and candidate of Sciences, doctor of philosophy (PhD) [3, 4].

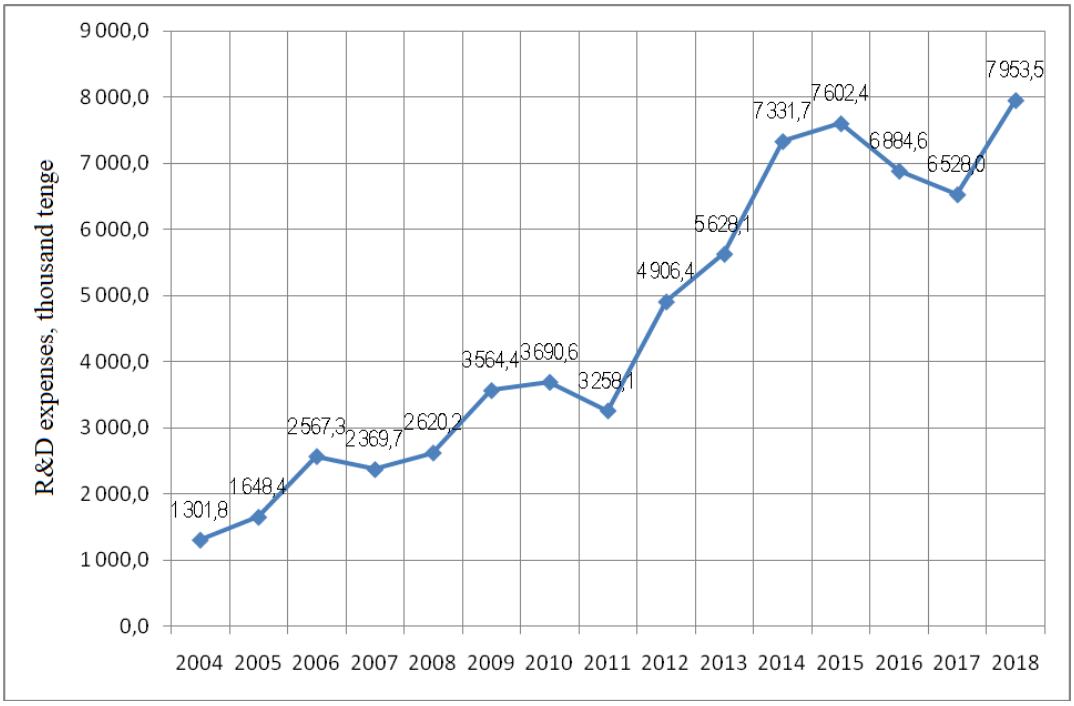

Figure 1- Domestic expenditures on research and development in the region of agriculture

One of the main changes in the management system of scientific and technical development of agriculture is the restructuring of existing research institutes. So 23 research institutes were merged into 12, and the number of agricultural pilot centers was increased, in 2018. In addition, it should be noted that business associations took an active part in making decisions on financing R&D projects in order to implement co-financing schemes in R&D projects.

According to OECD data, support for agricultural innovation in general increased on average and in most countries, while support for infrastructure investment declined on average, largely due to the recession in the European Union (figure 2).

The growth rate was calculated on the basis of expenditures in real terms of $ 2 000, using the US GDP deflator.

Innovation activity and investment.

The statistics Committee made a statistical observation of innovation activities of 30 501 enterprises, by the end of 2018. During the reporting period, 3 230 enterprises had innovations (in 2017 – 2 974 enterprises), of which 194 enterprises operate in agriculture, forestry and fisheries, including the number of enterprises that have: product innovations - 48, process innovations - 128, marketing innovations - 12, organizational innovations - 51 enterprises. The total number of enterprises with innovations increased by 256 enterprises, in comparison with 2017.

The innovative activity of enterprises in terms of product, process, organizational and marketing innovations was 10.6%, including 6.6% in terms of product and process innovations. The highest activity in the field of innovation for all types of innovations was observed among large enterprises and amounted to 41.7% (out of 1 764 reported large enterprises, 735 carried out innovative activities).

The volume of innovative products in 2018 compared to 2017 increased by 39.6% and amounted to 1 179 150.2 million tenge. Innovative products were sold in the amount of 1 134 952.6 million tenge. The volume of exported innovative products amounted to 161 671.9 million tenge. In the field of agriculture in 2018, the volume of innovative products (goods, services) amounted to 11 688 million tenge, innovative products were sold in the amount of 10 170. 3 million tenge, and the volume of innovative products (goods, services) sold for export amounted to 63.1 million tenge.

In addition, the cost of product and process innovations in 2018 decreased by

4.8% compared to the previous year and amounted to 856 449.5 million tenge (in 2017 – 899 681.8 million tenge), of which the cost of agriculture amounted to 15 120 million tenge. At the same time, the cost of product and process inno-vations from the enterprises ' own funds amounted to 392 226.1 million tenge, which is 45.8% of the total cost of product and process innovations [5,6].

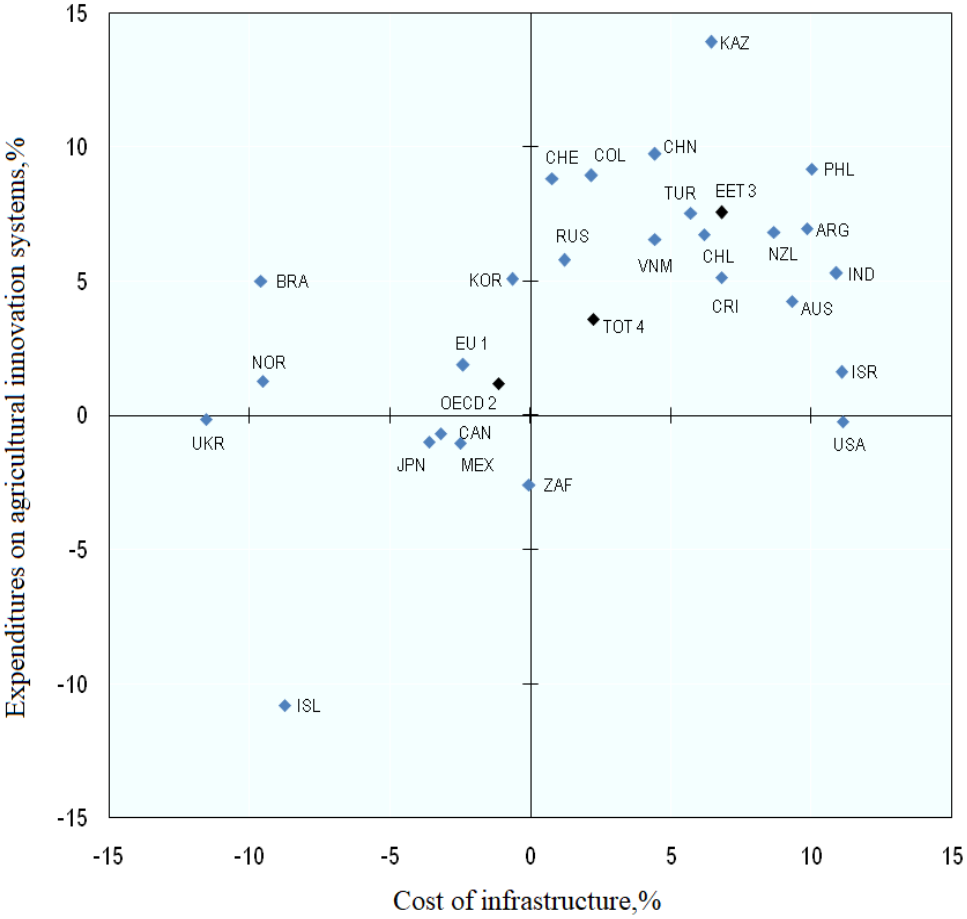

Figure 2 - Government spendings on agricultural innovation systems

In 2018, the volume of investments in agriculture, forestry and fisheries increased by 14.2% compared to 2017 and amounted to 365 001 million tenge.

The main grain-growing regions are in North Kazakhstan, Kostanay and Akmola regions sent 153.7 billion tenge to the industry, which accounted for the majority of investments in agriculture, forestry and fisheries (38.9%).

More than 89.7% of fixed capital investments in agriculture, forestry, and fisheries were directed to growing seasonal crops (59.5%) and livestock (30.2%) (figure 3) [7,8].

Results of the implementation of the State program for the development of the agro-industrial complex for 2018 [9].

In accordance with the decree of the Government of the Republic of Kazakhstan of July 12, 2018 № 423 the State program of development of agriculture of the Republic of Kazakhstan for the years 2017-2021 (hereinafter – the Program) was adopted.

The main goals of this program are:

- increase in labor productivity in agriculture and exports of processed agricultural products by at least 2.5 times over 5 years compared to 2017;
- increase the competitiveness of the agricultural sector by increasing labor productivity from 1.2 million tenge per 1 person employed in agriculture in 2015 to 3.7 million tenge by 2021, as well as exports of processed products from 945.1 million US dollars in 2015 to 2 400 million US dollars in 2021.

One of the objectives of this program is to ensure the development of agricultural science, technology transfer and the level of competence of agricultural entities.

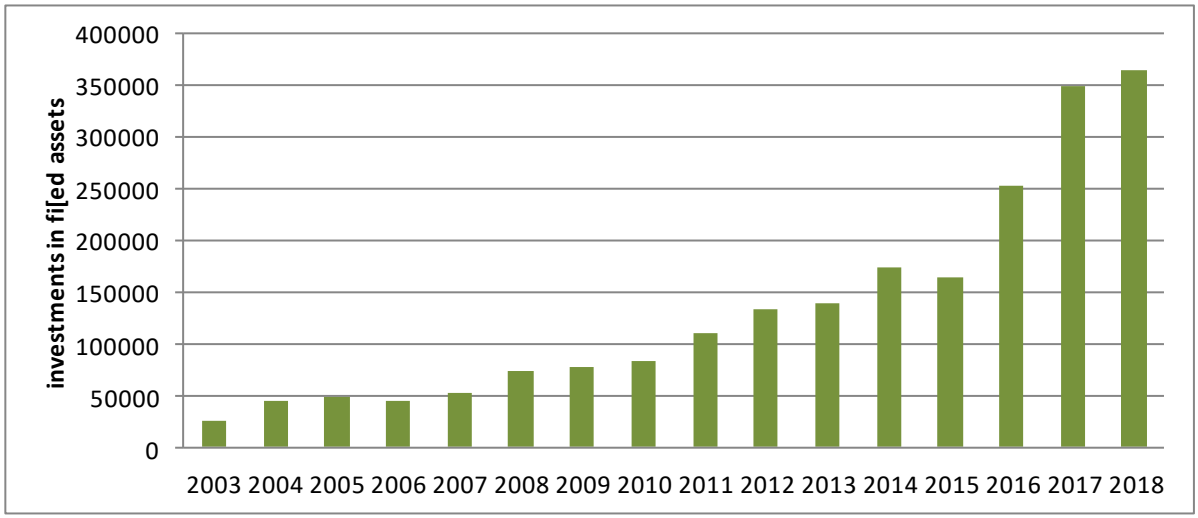

Figure 3 - Investments in agriculture, million tenge

As a result of the implementation of the above mentioned program for 2018, the following results were achieved:

● the share of business co-financing of R&D programs and projects from the total amount of funding was 2%;

● coverage of agribusiness entities with the services of the knowledge dissemination system was 5.6%;

● 35 license agreements on commercialization and transfer of agricultural technologies were made.

As part of the program's activities, projects of scientific and technical programs have been developed in priority areas. Decisions of the VNTK dated by August 22, 2018 and October 31, 2018 on approval of 42 applications for scientific, scientific and technical programs for funding in the framework of the competition for program-targeted funding for 2018-2020 were received.

The Ministry of agriculture has signed 42 agreements with scientific organizations for the implementation of program-targeted financing in the amount of 7.6 million tenge.

In addition, within the framework of this program, work is underway to modernize the scientific organization of the national Agrarian Research and Educational Center (hereinafter-NANOC), as well as work on the transformation of the leading agricultural Universities of Kazakhstan – KazNAU and KazATU into research universities.

Transformation of higher Education institutions includes 5 areas:

■ human resource development;

■ development of research and innovation activities;

■improving the quality of education;

■development of educational and scientific infrastructure;

■modernization and systematic improvement of the educational system.

NCJSC "NASEC" is a scientific and educational center, a single operator of sustainable interaction of scientific and educational institutions of the agricultural sector of Kazakhstan with the state and business.

The mission of NCJSC "NASEC" is to promote innovative development of the agro-industrial complex of the Republic of Kazakhstan through increasing the practical effect of agricultural science and providing the agricultural industry with highly qualified personnel. Among them: innovative approaches in agriculture for growth the yield of modern varieties, establishment of demonstration sites on the basis of experimental farms to test and implement new technologies, conduct domestic and foreign research and development for the development of agribusiness, strengthening and further development of the scientific environment in the agricultural sector.

On the basis of NCJSC «NASEC» and its organizations, scientific research is carried out to address specific tasks and needs of the agro-industrial complex in the following areas:

■ development of intensive animal husbandry;

■ ensuring veterinary safety;

■ intensive farming and crop production;

■ ensuring the phytosanitary security;

■processing and storage of agricultural products and raw materials;

■ technical support for the modernization of the agro-industrial complex of the Republic of Kazakhstan;

■ sustainable development of rural territories;

■ implementation of the results of scientific and technical activities (RSTA).

The Kaskelen agropark operates on the basis of NCJSC «NASEC», which is an innovative cluster where advanced technologies in the field of precision agriculture, crop production, seed production, phytosanitary, digital solutions and rational management methods are applied.

The project is being implemented as part of the digitalization of the agro-industrial complex of the Republic of Kazakhstan. It was created by a consortium of 5 scientific institutes, with an area of 1 630 hectares.

Another scientific Institute of NCJSC «NASEC» is The research and production center of grain farming named after A.I. Barayev, where precision farming technologies are used, which include:

♦ global positioning technologies (GPS);

♦ geographic information systems (GIS);

♦ yield assessment technologies (Yield Monitor Technologies);

♦ variable rate technology (VRT);

♦technologies for remote sensing of the earth (remote sensing).

The scientific concept of precision farming is based on the idea of the existence of inhomogeneities within a single field. The latest technologies, such as global positioning systems, special sensors, aerial and satellite images, and special programs for agricultural management based on geo-information systems, are used to assess and detect these inhomogeneities.

Conclusions.

1. In the context of growing global demand for agricultural products, large-scale modernization of agricultural production is necessary.

2. It is necessary, first of all, to increase the acreage, as well as to ensure a significant increase in labor productivity in Kazakhstan, which can be achieved, first of all, through the introduction of new technologies.

3. Since the effectiveness of the agricultural innovation system affects the overall productivity of the agricultural sector, measuring the effectiveness of the sector is vital for evaluating the innovation system.

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