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Report Name: Kazakhstan Finalizes 2021-2030 Agricultural Development Policy Document

Country: Kazakhstan - Republic of

Post: Nur-Sultan (Astana)

Report Category: National Plan, Agricultural Situation, Policy and Program Announcements

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Report Highlights:

On December 30, 2021, the Ministry of Agriculture finalized its 2021-2030 agricultural development policy document (“concept note”) describing the agriculture sector, market development plans, international trade outlook, government support programs, and expected results of implementing agricultural policies. This report provides a brief background, noteworthy mentions for U.S. stakeholders, and a full English translation of the policy document. Noteworthy segments include plans related to developing the livestock sector, cooperatives, state subsidies, new plant breeding and seed development regulations, combating climate change, import substitution policies, and using geographical information systems (GIS).

Background

The Ministry of Agriculture approved the “Concept Note of Industrial Agriculture Development of the Republic of Kazakhstan for 2021-2030.” The contents of this policy document are similar to the Ministry’s [National Agricultural Sector Development Project: 2021-2025](#). While the 2021-2025 project plan outlined quantitative success indicators, goals, and objectives to develop the sector, this policy document provides more context for the Ministry’s agricultural development plans.

Noteworthy Mentions

- On pages 9-10 of this report, the policy document described advances in cattle breeding, although it noted further work is needed to improve breeding stock, forage crops, and rangeland resources. On page 19, the document pointed out that many other countries increase the genetic potential of livestock through advanced breeding methods.
 - On pages 25-26, the document described plans to comprehensively train beef cattle producers to increase beef exports.
 - On page 33, the document called for a “large-scale training program” to share international animal husbandry best practices and technologies, including modern methods of breeding and artificial insemination, sustainable pasture management, and other relevant practices.
 - On page 34, the Ministry described plans to utilize “a strategic multinational company that has expressed a desire to invest in the meat industry” to increase meat exports.
 - On page 40, the action plan described constructing modern meat processing plants by December 2027.
- On pages 12-13, the document recognized the importance of cooperatives, but admitted that an estimated 42% of cooperatives were “fictitiously” created to receive government subsidies.
- On page 15, the report noted that subsidies increased by 20.4% between 2017 and 2020, reaching \$593 million in 2020.
- On page 18, the document mentioned the selection and breeding of new plant varieties using new methods based on molecular biology and genetic engineering to balance sustainability with climate change. On page 32, the document called for regulating the circulation of genetically modified seeds.
 - On page 44, the action plan noted adopting legislative measures to join the International Union for the Protection of New Varieties of Plants by July 2024.
 - On page 45, the action plan described developing regulations to control genetically modified seeds and planting material by 2023.
- On pages 23-24, the document estimated the crop yield by variety may decrease between 9 and 47% due to water shortages, affecting the country’s industrial agriculture sector and food security.
- On page 24, the document argued that due to external threats, such as the recent pandemic, the priority will be to ensure the country's food independence by implementing import substitution projects.

On pages 31 and 36, the document called for using international methods for using satellite imagery and remote sensing technology to determine crop acreage, to improve the application of agrochemicals, and to help conduct soil surveys.

[BEGIN TRANSLATION]

On approval of the Concept Note of Industrial Agriculture Development of the Republic of Kazakhstan for 2021 - 2030

Decree of the Government of the Republic of Kazakhstan dated December 30, 2021, No. 960.

In accordance with paragraph 66 of the State Planning System in the Republic of Kazakhstan, approved by the Decree of the Government of the Republic of Kazakhstan dated November 29, 2017, No. 790, the Government of the Republic of Kazakhstan hereby **DECREES:**

1. To approve the attached Concept Note of Industrial Agriculture Development of the Republic of Kazakhstan for 2021-2030 (hereinafter referred to as the Concept Note).

2. Central, local executive bodies, state bodies directly subordinate and answerable to the President of the Republic of Kazakhstan (if and as agreed) and other organizations (if and as agreed) responsible for the implementation of the Concept Note shall:

1) take the necessary measures to implement the Concept Note;

2) provide updates on the Concept Note implementation in accordance with the procedure and deadlines established by the Decree of the Government of the Republic of Kazakhstan dated November 29, 2017, No. 790 "On approval of the State Planning System in the Republic of Kazakhstan".

3. Control over the implementation of this decree shall be entrusted to the Ministry of Agriculture of the Republic of Kazakhstan.

4. This resolution shall enter into force from the date of its signing.

Prime Minister

A. Mamin

Of the Republic of Kazakhstan

Approved by the
Decree of the Government of the
Republic of Kazakhstan
dated December 30, 2021, No. 960

The Concept Note of Industrial Agriculture Development of the Republic of Kazakhstan for 2021 - 2030

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1. Data sheet

Name	The Concept Note of Industrial Agriculture Development of the Republic of Kazakhstan for 2021 - 2030 (hereinafter referred to as the Concept Note)
Basis for development	In accordance with task 5. "Reforming industrial agriculture sector to adapt to new conditions" of the National priority No. 8. "Building a diversified and innovative economy" of the National Development Plan of the Republic of Kazakhstan until 2025, approved by the Decree of the President of the Republic of Kazakhstan dated February 15, 2018, No. 636. In accordance with paragraph 66 of the Decree of the Government of the Republic of Kazakhstan dated November 29, 2017, No. 790 "On approval of the State Planning System in the Republic of Kazakhstan"
Government developer agency	Ministry of Agriculture of the Republic of Kazakhstan
State bodies responsible for the Concept Note implementation	Ministry of Agriculture of the Republic of Kazakhstan, Ministry of Education and Science of the Republic of Kazakhstan, Ministry of Industry and Infrastructure Development of the Republic of Kazakhstan, Ministry of Trade and Integration of the Republic of Kazakhstan, Ministry of National Economy of the Republic of Kazakhstan, Ministry of Finance of the Republic of Kazakhstan, Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan, Ministry of Energy of the Republic of Kazakhstan, Agency for Protection and Development of Competition of the Republic of Kazakhstan (if and as agreed), "Atameken" National Chamber of Entrepreneurs of the Republic of Kazakhstan (if and as agreed), "Baiterek" National Managing Holding Joint Stock Company (if and as agreed), "National Agrarian Science and Educational Centre" Non-commercial Joint Stock Company (if and as agreed)
Implementation period	2021 – 2030

Terms and definitions

The European Union (hereinafter referred to as the EU) is an international organization;

The International Federation of Organic Agriculture Movements (hereinafter referred to as the IFOAM);

The United States of America (hereinafter referred to as the USA);

The Commonwealth of Independent States (hereinafter referred to as the CIS) is an international organization;

Large, domesticated, cloven-hooved herbivores (hereinafter referred to as cattle);

Agricultural commodity producers (hereinafter referred to as ACPs);

Fuel, oil, and lubricants (hereinafter referred to as FO&L);

"National Agrarian Science and Educational Centre" Non-commercial Joint Stock Company (hereinafter referred to as NASEC);

Knowledge hub (hereinafter referred to as KH);

Research institutes (hereinafter referred to as RIs);

Higher educational institution (hereinafter referred to as HEI);

Agricultural experiment station (hereinafter referred to as AES);

Research and (or) scientific and technological deliverables (hereinafter referred to as RSTDs);

The World Trade Organization (hereinafter referred to as the WTO) is an international organization;

The Eurasian Economic Union (hereinafter referred to as the EAEU) is an international organization;

Organic agriculture (hereinafter referred to as OA);

"All-Russian Plant Quarantine Center" Federal State Budgetary Institution (hereinafter referred to as the VNIKR);

Federal State Information System (hereinafter referred to as the FSIS)

SPS are sanitary and phytosanitary measures;

Hazard Analysis and Critical Control Points (hereinafter referred to as the HACCP);

Good laboratory practice (hereinafter referred to as GLP);

The Organization for Economic Cooperation and Development (hereinafter referred to as the OECD) is an international organization;

The South Korean National Agricultural Cooperative Federation (hereinafter referred to as the NACF);

Food and Agriculture Organization of the United Nations (FAO) (hereinafter referred to as the FAO);

Research, Development and Engineering (hereinafter referred to as RD&E);

Wholesale distribution centers (hereinafter referred to as WDCs);

Trade and logistical centers (hereinafter referred to as TLCs);

Private subsidiary farms (hereinafter referred to as PSFs);

Republican state enterprise (hereinafter referred to as RSE)

World Organization for Animal Health (hereinafter referred to as OIE);

International Plant Protection Convention (hereinafter referred to as IPPC);

Research Institute of Organic Agriculture (hereinafter referred to as FiBL);

Sole Entrepreneur (hereinafter referred to as SP);

Peasant enterprise (hereinafter referred to as PE);

Farming enterprise (hereinafter referred to as FE);

Microfinance organization (hereinafter referred to as MFO);

Research and technical programs (hereinafter referred to as RTPs);

Experimental production farm (hereinafter referred to as EPF);

Crop information system (hereinafter referred to as CrIS);

Identification of agricultural animals (hereinafter referred to as IAA);

Risk management system (hereinafter referred to as RMS);

Gross output (hereinafter referred to as GO).

2. Analysis of the current situation

Since gaining independence, Kazakhstan, like other post-Soviet states, has begun to modernize the economy and reform all sectors of the national economy. This period marked the beginning of a new stage in the development of agriculture, characterized by the development of new forms of ownership and business formations in industrial agriculture.

The reforms resulted in a mixed economy in agriculture as a strategic direction of agricultural policy. However, no drastic transformation happened seamlessly for the national economy. Violation of long-term cross-regional and intersectoral economic ties has led to a crisis in agriculture.

The initial stage (1991 to 1999) is characterized by the industrial agriculture restructuring. Until 1991, state ownership was a constraining factor in market relations, since diversity of forms of

production ownership is a requirement for market transformations, on which the nature of the market process, distribution of consumer goods, exchange and distribution of products depend.

During the ongoing reforms, there was a decrease in the inflow of capital into the rural economy, production volumes decreased, rural standard of living fell sharply, and social tension in rural areas increased.

Before the financial crisis, production of gross agricultural output was characterized by annual growth. However, after the Asian crisis and currency devaluation, international economic environment deteriorated significantly for the economy of Kazakhstan, and the rate of agricultural production decreased significantly.

The share of capital investments in national agricultural production in 1997 amounted to only 1.5% of the total capital investments in the economy.

The share of profitable farms in 1997 was 23.4%, unprofitable – 72.4%.

In the period from 1991 to 2010, there was a steady decline in the percentage of gross value added of agriculture, forestry, and fisheries in the country's GDP from 29.5% to 4.5%, which indicated that growth of the industry lagged behind other sectors of the economy, including due to the growth of oil and gas and mining industries.

Since 2010, the share of gross value added of agriculture, forestry and fisheries in the country's GDP has stabilized (4.2%-5.4%), which indicates synchronous growth of agriculture with other industries.

Only a consistent state policy on raising agriculture, implementation of large-scale programs aimed at the revival and development of rural areas have yielded positive results. A dramatic change in the industry has become possible thanks to the ever-increasing state support and effective financial policy.

All this made it possible to reverse the situation in the production sector and in social matters in a short time.

The beginning of the 2000s stands out as a period of agricultural growth.

Thus, the volume of gross agricultural output in 2020 compared to 2000 increased 15 times (in nominal terms).

The inflow of investments into agriculture has increased almost 22 times compared to 2003.

Between 2018 – 2020, the volume of gross agricultural output increased 1.3 times and by the end of 2020 amounted to KZT6.3 trillion.

The inflow of investments into agricultural fixed assets over the same period increased 1.6 times and amounted to KZT565.4 billion in 2020.

Labor productivity per person employed in agriculture, forestry, and fisheries in 2020 amounted to KZT3.0 million.

At the same time, the average annual growth rate of labor productivity in agriculture, forestry and fisheries is almost 6.3%.

Horticulture

Over the years, the horticulture development trends consistently persisted. The area under agricultural crops has increased by 3%, including: oilseeds – by 2%, vegetable crops, cucurbits crops and potatoes – by 4.2%.

The area of irrigated land increased by 5%, and the area where water-saving technologies had been applied increased by 9%.

The average yield of potatoes increased by 4%, vegetables – by 3%, sugar beet – by 6%, fruit and berry crops – by 7.8%.

At the same time, the process of diversification in the crop industry is not at a proper level. Single-crop prevails in the main grain-growing regions of the country. Insufficient attention is paid to the development of fodder production. Expansion of irrigated lands and introduction of modern moisture-saving technologies are proceeding at an extremely slow pace. There are shortcomings in preserving soil fertility. The volume of mineral fertilizers applied is only 23% of the scientifically grounded norms, organic fertilizers – only 1.2%. During this period, the volume of domestic fertilizers averaged 65% of the total volume of fertilizers, imported – 35%. Fertilizers not produced domestically (carbamide, ammonium sulfate, complex (nitrogen-phosphorus-potassium) fertilizers, liquid, and micro fertilizers) are in demand among agricultural producers. The seed farming system also presents a challenge. Due to the insufficient development of the domestic seed farming system, the availability of seeds for the main types of agricultural crops is decreasing. Thus, the import of wheat seeds has increased 7 times over the past five years, barley - 4 times, and seed sufficiency of hybrids of oilseeds, vegetable crops and sugar beet are about 10%. The rate of agricultural fleet renovation is also lagging behind. In 2020, this figure was 4.1% with a standard of 6-8%. Currently, about 76% of the fleet has a service life of over 10 years. In most regions there is no real diversification in the crop industry, land use rules are violated due to the lack of effective control methods.

Development of organic farming has started. Since 2009, the area of certified organic lands has increased more than 2 times – from 134 thousand hectares to 300 thousand hectares. Currently, 70 farms have received certificates from foreign bodies that confirmed their compliance for the production of organic products. In 2020, Kazakhstan exported organic products worth USD12.5 million billion.

According to the IFOAM international rating, out of 123 countries exporting organic products to the EU member states, Kazakhstan ranks 9th, including 4th in organic wheat, 6th in organic oil flax seeds.

Opportunities for development of organic farming are not being utilized at a proper level. Only about 1.5% of the total crop area of 22 million hectares is cultivated using organic crop production technologies. At the same time, according to the calculations of foreign experts, 46% of the arable land used (11.5 million hectares) and 70% of pastures in Kazakhstan are suitable for organic crop production and animal husbandry. There is no domestic market for certification services in the field of organic production. There are no forms of collective certification of organic producers.

The regulatory framework for the production and turnover of organic products needs to be improved.

In 2018 – 2020, the area of quarantine facilities was reduced from 135.8 thousand hectares to 61.8 thousand hectares in 2021. At the same time, the issue of the phytosanitary service modernization is particularly sensitive in connection with the development of integration processes and the growth of trade with other countries.

There is no system of phytosanitary traceability, accounting of plant protection agent circulation and use.

The main problems of the crop industry are:

- low level of diversification;
- underdevelopment of selection undertakings and seed production system, lack of seeds of domestic breeding;
- deterioration of soil fertility;
- insufficient usage of water-saving technologies in irrigation;
- low level of technical and technological equipment of the industry;
- high corruption component in the implementation of control and supervisory functions and public services;
- insufficient digitalization of the industry;
- underdevelopment of organic farming, insufficient technologies for the production and processing of organic raw materials; and regulatory legal acts and national standards in force in the field of organic production do not meet the interests of domestic producers and do not correspond to international practices.

Animal husbandry

In 2018 – 2020, the gross output of the industry (hereinafter – GO) of livestock increased from KZT2.1 to KZT2.6 trillion, due to an increase in production therein: meat of all kinds in slaughter weight – by 10.3%, milk – by 6.4%.

There was an increase in the number of cattle – by 9.8% to 7.9 million heads, sheep – by 8.1% to 17.7 million heads, horses – by 19% to 3.1 million heads, camels – by 9.7% to 227.7 thousand heads.

The productivity of livestock has increased. Over the years, the average milk yield per cow in agricultural enterprises increased by 5.2% and reached the level of 4320 kg, the average daily weight of cattle increased by 1.7% and amounted to 418 kg.

The number of farms engaged in breed transformation increased from 6.3 thousand to 25.3 thousand, industrial dairy farms increased from 65 to 206, which allowed to increase the production of commercial milk in organized farms by 14.7% from 894.2 to 1,025.8 thousand tons.

The share of the breeding stock of cattle covered by breed transformation increased from 29.6% to 37.7%.

At the same time, animal husbandry is developed without taking fodder resources into account. In general, the volume of domestic feed production is 2 times lower than it is required by the technical standards. Depending on the region, from 20% to 60% of pasture lands have degraded. 48% of pasture lands are not being used due to the lack of watering. There is an acute shortage of pasture lands for livestock of private subsidiary farms, which has become one of the most pressing problems today.

The country has not achieved self-sufficiency in poultry meat and dairy products.

During the same period, the epizootic situation in the country will remain tangled for a number of particularly dangerous diseases. This is mainly due to the risks of introducing animal diseases from other countries, climatic conditions, increase in international trade, movement and misplacement of animals and animal products, etc. In 2018, 226 sources of particularly dangerous diseases were registered in the country, and in 2020 this number amounted to 330 sources. In

particular, such a sharp increase is due to the registration of 98 sources of highly pathogenic avian influenza at the end of 2020, as a result of which about 2.0 million birds were destroyed.

Today, the diagnosis of particularly dangerous and enzootic animal diseases remains under the state monopoly which limits competition in this sector.

Due to the limited budget, material and technical resources of state veterinary organizations continues deteriorating every year. In most of the organizations, the main means of production are physically worn out and rendered themselves obsolete. Low wages have led to an increasing shortage of practicing veterinary workers in the field, also attractiveness of this profession is decreasing. Training and development of veterinary personnel is also one of the issues of concern.

The main problems of the industry include:

a high proportion of livestock in private subsidiary farms is not covered by technological processes and is not provided with sufficient feed;

a high proportion of nondescript cattle is primarily in private subsidiary farms;

shortage of pastures for livestock in rural settlements;

the weakness of the forage resources, the low proportion of forage crops in crop rotation and on irrigated lands, as well as degradation and low productivity of pasture lands;

challenging epizootic situation and low wages among veterinary specialists;

low level of distant pastures development due to the insufficient water supply;

limited environmental monitoring in the sector, in particular with regard to greenhouse gas emissions;

shortage of qualified personnel in animal husbandry.

Processing of agricultural products

In 2018 – 2020, food production increased from KZT1,527.7 billion to KZT1,957.2 billion. The growth rate for the period 2018-2020 averaged at 100.9%. The physical volume index in 2020 was 103.2%.

As of January 1, 2021, there are 1,168 enterprises operating in the country, including 248 grain processing enterprises, 172 meat processing enterprises, 68 fat and oil enterprises, 36 fruit and vegetable processing enterprises, 172 milk processing enterprises, 59 cereal processing enterprises, 40 pasta processing enterprises, 40 confectionery enterprises, 305 bakeries, 25 fish processing enterprises, 4 sugar factories, 3 high-level grain processing enterprises, etc.

The share of grain processing in 2020 was 38% (in 2018 – 33.8%), oilseeds – 40.2% (in 2018 – 36%), sugar beet – 89% (in 2018 – 87%), milk – 35.8% (in 2018 – 31.2%), meat – 32.4% (in 2018 – 32.9%).

Investments in fixed assets in food production in 2020 amounted to KZT109 billion, in 2018 – KZT125.7 billion.

In 2018 – 2020, 49 new agricultural processing enterprises were put into operation, including 9 oilseeds processing enterprises, 6 fruits and vegetables processing enterprises, 15 milk processing enterprises, 5 meat processing enterprises, 6 rice processing enterprises, 3 confectionery processing enterprises, 2 cereals processing enterprises, 1 flour processing enterprise, 1 pasta processing enterprise, 1 high-level grain processing enterprise.

In general, there is a potential for a twofold increase in production volumes at existing facilities in terms of agricultural products processing.

The main problems of the industry include:

underutilization of capacities due to limited volumes of high-quality raw materials and shortage of working capital;

high level of obsolescence and physical deterioration of fixed assets.

Market development

Domestic market security in terms of main types of food products, including 19 socially significant food types, is 80 percent or more due to domestic production.

At the same time, the share of domestic production in domestic consumption remains at a low level for six food types. In particular, these are: apples (73%), poultry meat (58%), sausages (61.5%), cheeses and cottage cheeses (51%), sugar (31%), fish (75%).

Over the past 3 years, exports of agricultural products have increased by USD289 million and amounted to USD3.3 billion (2018 – USD3.1 billion).

There is an increase in wheat exports by 24.2% (from USD971.8 million to USD1 billion), flax by 48% (from USD141.1 million to USD206.5 million), sunflower oil by 72.5% (from USD66.2 million to USD103.4 million), pasta by 1.4 times (from USD18 million to USD44.2 million).

At the same time, export of processed agricultural products for three years has increased by USD215.2 million and amounted to USD1.3 billion (2018 – USD1.1 billion).

In the total export structure of processed agricultural products, flour accounts for 36.3%, vegetable oil – 7.7%, confectionery – 8.4%, dairy products – 4.1%, fish products – 10.7%, mineral waters – 2.7%.

The main sales markets are the CIS countries, Asia, and the EU. About 58.4% of agricultural products are exported to the CIS countries, Asia (17.6%) and the EU (7.3%) and other countries (17%). About 57.7% of agricultural exports are crop products – cereals and oilseeds, flax, cotton fiber, legumes, potatoes.

The markets of Iran, EU countries, United Arab Emirates, Kingdom of Saudi Arabia, Mongolia, Japan, Turkey, Korea, Georgia, and China are also currently open for the export of live animals and animal products.

Domestic market security for the main types of food products is 80% or more percent due to domestic production.

At the same time, import dependence on six food types remains, as well as weak involvement of small and medium-sized producers in the supply chain, difficulty of access to trade facilities for medium and small farmers are still in place due to their small scale and unstable supply.

Unstructured supply chain of domestic agricultural products leads to an increase in prices and inefficient intermediaries.

Also, due to instability and small scale of supplies and non-compliance with requirements (calibration, packaging, food safety), retail chains prefer to work with large manufacturers and suppliers.

The main problems in the development of markets are:

low competitiveness of domestic products;

undeveloped system of product procurement, storage, primary processing, and sale;

large number of intermediaries;

import dependence on some commodity items;

insufficient level of integration into the sales chain;
veterinary, phytosanitary and trade barriers;

Technical equipment

The level of agricultural machinery fleet renovation over the past 3 years shows a positive trend.

In 2018 the renewal rate was 3.5%, by 2020 it was 4.1% (an increase of 17%). The optimal technological upgrade level is 6-8%. At the same time, the main problems are:

low rates of equipment renovation in medium and small farms;

low share of domestic agricultural equipment and increase in prices for agricultural equipment accordingly.

Agricultural cooperation and industrial agriculture infrastructure

In 2018 – 2020, the total volume of gross agricultural output increased from KZT4.5 trillion to KZT6.3 trillion. The share of the service sector in the total gross agricultural output decreased from KZT13.1 billion to KZT10.9 billion, which is less than 0.2%. Due to service infrastructure underdevelopment, ACPs are forced to buy commodities and material resources necessary for production at high prices and sell their products at low prices. In addition, most medium and small producers are not able to maintain specialists in their staff, although they need their services most of all.

Credit resources remain unavailable for most farmers. The reasons for this include underdevelopment of financial instruments, absence of relevant divisions in second-tier banks on the one hand, and lack of acceptable collateral on the other hand.

Given the low rates of agricultural equipment and machinery renovation in the industry, the situation with power and technical equipment of small peasant and private subsidiary farms has become particularly challenging.

In recent years, the following state support measures have been introduced to stimulate cooperation development:

investment subsidies;

cost reduction of harvested agricultural raw materials;

a special tax regime has been established for agricultural cooperatives, providing for a 70% discount on all taxes.

In addition, there is simplified registration procedure; information and financial support, state register and statistical monitoring have been compiled.

At the beginning of 2021, 2,919 agricultural cooperatives and 49,374 of their members were registered in Kazakhstan.

At the same time, the efficiency of these cooperatives remains extremely low, and this is a repulsive factor for most ACPs. 2018 audit results revealed that 18% of cooperatives were inactive, and 42% were "fictitious," i.e., organized to receive state subsidies.

However, there are also successful examples of cooperatives. For example, "Ertis-Agro" in Pavlodar region unites about 40 farms. Members of this cooperative purchase FO&L, fertilizers, and herbicides in bulk at a cheaper price and sell their crops in a single batch. Moreover, this cooperative has acquired a grain silo and all members of the cooperative are its co-owners determine its rules of operation based on one member-one vote principle.

In Kostanay region, there is a successful model of "Uspenovka Sut" cooperative that produces and sells milk and combines personal subsidiary farms. This cooperative has concluded an agreement with "MILKH", a large milk processing enterprise, at a fixed price of KZT110 per liter of raw milk.

Cooperatives that cultivate and fatten young cattle are successfully operating in the south of the country.

The successful experience of private subsidiary farms cooperation in Zhambyl region has shown the prospects of combining PSFs for joint resolution of common issues.

The main problems of cooperation in rural areas are:

low confidence of farmers in cooperatives due to negative experience of the past years and mistakes made when creating local cooperatives;

poor awareness of the cooperative model;

shortcomings of normative legal acts.

Scientific support and staffing in industrial agriculture

Currently, scientific support of industrial agriculture is represented by the "National Agrarian Science and Educational Centre" Non-commercial Joint Stock Company (hereinafter – NASEC), which includes 3 HEIs, 14 RIs, 18 EPFs and AES, 3 service centers. In addition, 10 RIs of the Ministry of Education and Science of the Republic of Kazakhstan (MES) and the Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan (MEGNR) are engaged in scientific research industrial agriculture.

The reform of the agricultural system allowed NASEC to build a coherent scientific and production vertical structure per international practices, so compared to 2018, the number of research institutes decreased from 23 to 14, and the number of EPFs and AES increased from 13 to 18. In addition, 3 demonstration sites and 60 model farms have been created in the NASEC system in recent years.

NASEC staffing has been optimized to 9480 employees (in 2018 there were 10349 employees). Including: about 3,000 researchers, among them: 246 Doctors of Sciences, Candidate of Sciences – 913, 229 PhD holders and 915 Master's degree holders.

Training of personnel with higher education for industrial agriculture is carried out by 3 specialized agricultural universities of NASEC, 8 regional universities with agricultural faculties, and 12 multidisciplinary universities. In addition, 56 agriculture-focused vocational institutions provide training for personnel with technical and vocational education.

Currently, there are 25 Knowledge hubs (KHs).

Aging scientific personnel, decreasing scientific staff, high level of obsolescence and physical deterioration of scientific and technological equipment, decreasing budget funding have been observed in agricultural sector. As a result, the number of RSTDs transferred to agricultural production remains low, and business are still dissatisfied with the training of specialists for industrial agriculture.

The main problems are:

weak connection of agricultural science and education with production in matters of personnel training;

insufficient financing of agricultural scientific research (less than 1% of the agricultural GO);

low demand for RSTDs among the subjects of industrial agriculture and their introduction into production;

underdevelopment of agricultural science service infrastructure, including the lack of KHz and insufficient transfer and commercialization of agricultural technologies;

underfunding of knowledge dissemination, commercialization, and transfer of agricultural technologies;

weak interaction with the leading scientific centers from the developed countries.

Land resources

The area of agricultural land assigned to land users is 108.6 million hectares.

Among agricultural lands include most valuable for industrial agriculture fields, including tilled fields, perennial plantings, lay-lands, hayfields, pastures.

As of January 1, 2021, 97.2% agricultural lands consist of agriculture fields, including: tilled fields – 23.8%, perennial plantings – 0.1%, lay-lands – 1.7%, hayfields – 2.0%, pastures – 69.6%.

Over the past 3 years, there has been an increase in tilled fields by 5% amounting to 26.3 million hectares, hayfields – by 5% amounting to 2.2 million hectares, pastures – by 7.4% amounting to 75.6 million hectares. There is a decrease in lay-lands by 40% amounting to 1.8 million hectares.

In addition, over the past 3 years, 307 thousand hectares of land have been withdrawn from agricultural lands to expand the boundaries of settlements and industry.

From 2018 to 2020, agricultural mapping was carried out on an area of 34 million hectares.

The automated information system of the State Land Cadaster contains 6.5 million data points on land plots in the attributive part and 5 million data points in the graphical part.

In 2018 – 2020, large scale digitalization of agricultural lands was carried out.

A space monitoring technology has been developed and implemented to monitor the progress of sowing and harvesting operations.

At the same time, the division of powers between the central and local executive bodies carried out in 2014 led to destruction of the unified vertical of land inspection and, as a result, weakening of control over land use processes. Bodies designed to conduct agrochemical soil survey remain scattered.

There are still insufficient amounts of funding for soil surveys and vegetation surveys.

In addition, the poorly chosen tactics of central executive bodies to use private property institution to activate the process of involving agricultural land in the market turnover in 2016 caused a negative reaction from the public, because of which it was necessary to impose a moratorium on certain provisions of the Land Code. Unfortunately, this issue remains unresolved.

As a result of land reforms, the number of economic entities has grown significantly and in 2020 amounted to 227,515 entities, including 215,806 peasant and farm enterprises on a 66.2 million hectares area, 11099 non-governmental legal entities on a 40.3 million hectares area, 610 governmental legal entities on a 0.8 million hectares area.

Nevertheless, the issues of monitoring land use processes remain unresolved due to the lack of effective methods for determining the species composition of plants in fields and pastures based on modern digital technologies. To maintain the boundaries of the current agricultural formations whose land plots were once formed with the use of rural resident land shares, it is necessary to revise and specify certain provisions of the Land Code regarding the rights of citizens to conditional land share.

The main problems are:

irrational use of agricultural lands, lack of an effective control over land use processes and compliance with crop rotations;

complete decentralization of land relations and state control over land use and protection;

depreciation of lands, lack of a unified service and platform for qualitative (soil, geobotanical, agrochemical) land accounting, non-compliance with the requirements for survey frequency due to lack of funding;

lack of information from a single source about vacant land plots in electronic format;

low involvement of unused agricultural lands;

problems of conditional land shares in terms of withdrawal from the composition with a specific land plot, in the payment of dividends and the prohibition of withdrawal with collateral in second-tier banks;

methodological inconsistency in assessing land resources against the LDN classification (SDG indicator 15.3.1) requirements which does not allow for comparative analysis and assessment with other countries.

Digitalization of industrial agriculture

To date, the share of agricultural producers using digital technologies in agriculture is insignificant which limits productivity growth and cost reductions.

Precision agriculture elements are being introduced into pilot farms which made it possible to reduce the costs of farmers by 20% and increase the yield, for example, of cereals up to 25 metric quintals per hectare.

In pilot livestock farms, digitalization has reduced costs by 15-20% with a decrease in mortality and an increase in livestock by 15 and 10%.

Also, use of modern equipment has influenced the increase in milk yield by more than 18%; calf crop has increased by 20%. It was possible to reduce the service period of cows (from calving to fertilization) by monitoring cow's physical condition.

The main problems are:

weak and unstable mobile communication network and Internet in rural areas;

lack of knowledge and skills in implementation of digital solutions;

lack of local specialists at the nexus of agriculture and IT solutions;

lack of a single digital agriculture ecosystem.

State support

The volume of state support for industrial agriculture has continued to increase steadily in recent years. Thus, the volume of the leasing in 2020 compared to 2017 increased by 155% and reached KZT114 billion, the volume of subsidies increased by 20.4% and reached KZT260.5 billion. Based on this the volume of preferential loans for seasonal agricultural work has also increased. In 2017, KZT67.3 billion of concessional credit resources were allocated for these purposes, this indicator reached KZT86.2 billion in 2020.

Institutional financial support for industrial agriculture has been established through specialized organizations, transferred in 2021 under the unified management of “Baiterek” NMH JSC.

All business processes for obtaining subsidies have been automated. Transition from compulsory agricultural insurance to voluntary insurance has been carried out. However, quite a few issues

remain in place. This includes is a low assessment of financial institutions for collateral for small and medium-sized farmers, limited both credit and budget funds. Incomplete Internet coverage of rural areas throughout the country.

Currently, subsidies in the industrial agriculture are carried out in 12 directions and of 51 types.

The main problems are:

low investment attractiveness of industrial agriculture;

low availability of bank loans and lack of incentives for the non-governmental financial sector to reduce interest rates on loans and leasing;

limited resources of quasi-state development institutions to finance the industry;

insufficient collateral, unattractiveness of agricultural lands due to their low liquidity;

low level of financial literacy among farmers;

lack of counter obligations of subsidies recipients and lack of clear, easily controlled indicators demonstrating subsidy effectiveness;

lack of an effective subsidy planning and monitoring system.

In general, in recent years, thanks to the implementation of state support measures, there has been a positive trend in industrial agriculture development in the Republic of Kazakhstan (hereinafter referred to as industrial agriculture), the volume of production of agricultural products and processed products is increasing, and equipment and modern high-performance agricultural machinery is growing.

Priority is given to national competitive advantages and their development in a market economy within global production and agricultural trade. Ensuring agricultural competitiveness presupposes its sustainable development based on industrialized agricultural production and its increasing efficiency.

Industrial agriculture has prospects for further development: there are broad sales markets, sufficient areas of agricultural land, high prospects for the development of irrigated agriculture, export of the oilseed and meat sub-sectors is strengthening, and Kazakhstan is among the largest exporting countries in the world in terms of grain and flour.

Kazakhstan's membership in the Eurasian Economic Union (hereinafter referred to as the EAEU) and the World Trade Organization (hereinafter referred to as the WTO) creates opportunities and at the same time places high demands on the competitiveness of industrial agriculture industry both in domestic and foreign markets. In this regard, effective state regulation of industrial agriculture and the promotion of its development are important.

The SWOT analysis of the industrial agriculture shows a significant vulnerability of the agricultural sector based on objective factors – a narrow market for food consumption, lack of direct access to sea transportation, high risks from climatic conditions, limited water resources, unavailability of credit financing, low involvement of second-tier banks in industry financing, low development of trade and logistics infrastructure, life support systems in the countryside.

Industrial agriculture SWOT analysis

Strengths	Weaknesses
Kazakhstan ranks ninth in the world in terms of its area;	limited domestic market for food consumption and lack of export commodities;

<p>Kazakhstan ranks second in the world in terms of farmland per capita; 1.4 million hectares of irrigated land are available; Kazakhstan is among the largest exporters of grain and flour; large areas of vacant and unused pastures; developed traditional culture of pastoral cattle breeding; significant labor resources: the share of the rural population is 43% of the total population; a variety of soil and climatic zones that allow producing a wide range of agricultural products and ensuring the country's food independence; diversity in the organizational forms of agricultural production; growing demand for food products in neighboring countries.</p>	<p>predominance of small-scale production of individual branches of industrial agriculture; high degree of degradation and desertification of pastures; considerable distance from cheap transport corridors; insufficient level of processing of agricultural raw materials; underdevelopment of trade and logistics infrastructure and wholesale link; insufficient level of applied agricultural technologies; low rates of renovation of agricultural machinery; low level of diversification; lack of proper interrelation of science with production; high capital intensity of the industry; low level of bank lending to agricultural organizations; high dependence of agribusiness development on financing through quasi-governmental institutions; high risks from climatic conditions; lack of effective and efficient methods of control over land use processes; limited water resources, 44% of the runoff occurs on the territory of neighboring states; insufficient level of social infrastructure in rural areas; lack of transparent mechanisms for the redistribution of land resources; insufficient level of life support in rural areas; lack of personnel and qualified specialists in agricultural production; lack of a pollution monitoring and control system of agricultural production impact; lack of full traceability for agricultural products; trend of environmental pollution and soil fertility decline; low coverage of agribusiness information and consulting support system; lack of a comprehensive approach to promoting agricultural products, especially to export markets; high share of imported production resources; lack of systematic comprehensive analysis and monitoring of agricultural development and risks; poor development of agrometeorological forecasting; flawed distribution and control over the use of subsidies.</p>
<p>Opportunities</p>	<p>Threats</p>
<p>improving efficiency of agricultural production based on development of national competitive advantages; use of an advantageous geographical location to introduce Kazakhstani products into foreign markets; high potential for production and export of organic products; increasing the area and efficiency of irrigated lands; making necessary arrangements for sustainable development of industrial agriculture considering complexity of organizational forms in agricultural production, creation of modern social</p>	<p>impact of global climate change on traditional agricultural technologies; growth of competition in international markets, including the CIS countries; growing inequality in income and life support systems between rural and urban populations; risk of inefficient industry development management by the state; decrease in the share of the rural population due to urbanization and lack of labor resources; instability in financial (inflation) and currency (devaluation) markets; unjustified granting of subsidies.</p>

infrastructure of rural communities and preservation of the ecological status quo; there is a great potential for attracting foreign investments to industrial agriculture.	
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At the same time, the agricultural sector of Kazakhstan has significant untapped potential and national competitive advantages in comparison with other countries, which, with an effective agrarian policy, can ensure its sustainable development and make a significant contribution to the country's economy and improving the welfare of the population.

3. Overview of international experiences

Horticulture

A review of international experiences shows that all developed countries, on the one hand, strive to increase sustainability of agricultural development given the ever-increasing negative impact of global climate change. On the other hand, countries strive to transition to resource-saving and organic technologies aimed at improving the ecological situation and preserving the environment. This includes, first of all, a high degree of diversification, transition to precision agriculture and digitalization of all technological processes. Special attention is paid to selection and breeding of new plant varieties using accelerated methods based on molecular biology and genetic engineering. Thanks to this, scientific organizations derive and transfer for practical use new high-yielding varieties of crops resistant to diseases and stressful situations every 5-6 years.

An important point is to increase the accuracy in forecasting weather conditions which is achieved through a wide network of weather stations in the country and an appropriate database of long-term meteorological observations.

Currently, organic production in the world is developing dynamically. The increase in demand has a steady trend, and the world market of organic products continues to show positive dynamics. Organic agriculture land area has reached 71 million hectares, which is 1.5% of the world's agricultural land area.

International practices and the positive experiences of the leading countries (USA, EU) in organic production show that economic imbalance is compensated by measures that encourage producers to remain organic.

Experience of the EAEU member states. In the Russian Federation, certificates are issued exclusively based on laboratory conclusions (VNIKR), while the inspector does not decide on the phytosanitary condition of exported products. When importing, the inspector selects samples and sends them for laboratory examination on a mandatory basis, based on the results of which the inspector decides. The Argus-PHYTO FSIS has been implemented.

Laboratory QA tests are carried out on a paid basis and at the expense of the product owner across almost all countries.

TRACES system has been implemented in the EU; national information systems are also being used.

As the analysis of foreign experiences shows, transition to paid quarantine phytosanitary control and the issuance of permits on a fee basis has an advantage in comparison to the system of quarantine phytosanitary control and issuance of permits in our country for the following reasons:

corruption risks are excluded;

incoming funds, some of which are directed to the budget, remaining are directed to remuneration of inspectors, renovation of the material and technical resources of the service.

Animal husbandry

In all advanced countries, development of animal husbandry is based on a solid feed basis. Forage crops take a large share in crop rotation.

In the USA, almost 65% of the harvesting area is occupied by cereals and legumes, and the volume of feed grains is 4 times higher than food grains.

Special attention is paid to increasing the genetic potential of livestock.

Animal breeding is carried out using modern methods of biotechnology, genomic and DNA analysis, accelerated reproduction methods. Due to the abovementioned, all livestock is consolidated in the developed countries.

In May 2021, the Agreement on Measures Aimed at Unification of Selection and Breeding Work with Agricultural Animals in the Framework of the Eurasian Economic Union entered into force, which was ratified by all EAEU member states. The EEC acts have been developed and approved within the framework of the Agreement to unify selection and breeding work in the EAEU, which will allow for unified work on testing the breed, determining the breed, conducting DNA research of the transported breeding products (materials), a list of necessary information on breeding animals. The methods of "index evaluation" of dairy and meat cattle and pigs' productivity have also been approved. Based on these documents, selection and breeding work is unified across the EAEU.

Advanced countries, in particular the EU and the USA, also incorporate the principles of environmental sustainability and green growth in investment planning and policy development in the livestock sector and pasture management.

Processing of agricultural products

Developed countries have achieved high results in the food supply of the population by stimulating the modernization of machinery and technologies in the field of processing.

In Russia, processing industry development is carried out by supporting the production of agricultural raw materials, modernization and capacity building through technical re-equipment and construction based on innovative technologies and resource-saving equipment, stimulating cooperation between agricultural producers and processors.

In the European Union, producers and processors of raw materials and other beneficiaries of rural development can use loans or guarantees to cover operating costs on very favorable terms, such as extremely low interest rates or convenient payment schedules.

In the USA, work is underway to encourage private companies to invest in the development of innovations and competencies in the industry through introduction and mass expansion of scientific developments based on new technologies that contribute to increased labor productivity.

Globally, the matter of strengthening sustainable long-term relations between producers of agricultural raw materials, processing enterprises and trade is a factor of productivity and product cost growth.

Market development

Analysis of the most advanced countries allows us to identify the following patterns and approaches aimed at developing sales of domestic agricultural products:

International experience shows that the key to successful participation in the marketing chain of farmers is marketing cooperation. To date, up to 70% of products are sold in Europe through cooperatives, 60% in the USA and Canada.

For example, in the Netherlands, cooperatives sell more than 80% of marketable milk, almost all vegetables, 95% of fruits and 90% of wool. French cooperatives produce and sell up to 70% of wine on the international market, and their participation in the production of alcohol and olive oil is high. Marketing cooperatives form large batches of goods and conclude supply contracts in advance.

Developed trade and logistics infrastructure throughout the supply chain. Examples of successful distribution networks based on the WDCs (WDC networks) are the Rungis wholesale market (Paris, France), Mercasa wholesale market network (Spain) and the Bronisze wholesale market (Warsaw, Poland).

The network meets the needs of 3,600 tenants, of which 32% are engaged in fruit and vegetable products, 12.5% – fish and seafood, 8.2% – meat products, 3% – flower and 44% – other types.

International standards and requirements (SPS measures, HACCP, GLP, etc.) have been implemented in developed countries (Canada, Australia, New Zealand) which increases confidence and quality of products in these countries.

An indispensable component of the trade policy across developed countries is to promote the interests of exporters at the interstate level through negotiations to remove trade barriers and the conclude agreements and other documents. The most active countries are the USA, EU, Australia, Canada, Brazil, Mexico, Japan.

Agricultural cooperation and infrastructure development of industrial agriculture

In most OECD countries, cooperatives are present at all parts of the agricultural value chain and include farms of all sizes. Agricultural cooperatives are highly developed in the EU: almost 22,000 cooperative enterprises unite more than 6.1 million members, generating an annual turnover of approximately EUR347 billion. On average, 57% of farms in the EU and 92% in the USA participate in cooperatives. In Austria, Finland, Germany and Sweden, an average farmer is a member of at least two agricultural cooperatives. This suggests that cooperatives in OECD member countries are characterized by specialization (for example, marketing, processing, farm production supplies); they often operate under secondary and tertiary cooperative organizations (for example, unions and federations).

It is cooperatives in many countries of the world that have laid the foundation of agricultural infrastructure.

For example, US cooperatives supply farmers with fuel, mineral fertilizers, feed, provide marketing and transportation services to their members, and engage in retail sales of agricultural products.

At the end of 2017, a law was passed in the United States giving significant tax preferences to farmers selling their products to cooperatives. 20% of sales to a cooperative is subject to tax deduction. If the taxable profit of the farmer turns out to be less than a fifth of the supplies to the cooperative, then this farmer will be exempt from paying taxes altogether.

The functions of large supply cooperatives in the USA include wholesale purchases of seeds, chemicals, fuel, and veterinary drugs; production of compound feeds, quality control of feed ingredients, delivery of feed to the farm; repair of machinery and equipment, delivery of spare parts.

Today, there are about 1,500 cooperatives in Canada's agricultural sector which includes more than 4 million members. Moreover, one farmer can establish several cooperatives which are divided by type of activity into: consumer, service, processing, mixed. Over 50% of grain and oilseeds, 36% of mineral fertilizers, 21% of compound feeds, 19% of seeds are sold through cooperatives.

There is a lot of support for cooperatives available in the EU, as they are perceived, among other things, as one of the main factors of sustainable development in rural areas. On the contrary, in the CIS countries, for example, there is a clear picture that an agricultural holding can contribute to industrial agriculture development, but not necessarily to the development of rural areas.

An important area of cooperative activity in the EU countries is the operational procurement of farms. The share of procurement and supply cooperatives in the EU accounts for about 50% of supplies to commodity producers of farm production supplies they need. The basis of cooperative supply activities is the provision of mineral fertilizers and feed.

Currently, there are more than 2,500 active cooperatives in the Netherlands, and agriculture and finance remain the largest sectors. About 70% of agricultural turnover is situated in cooperatives which is higher than the EU average of 45%.

In several EU countries, cooperatives play a significant role in supplying farmers with seeds. For example, in Denmark, cooperatives account for 35% of the supply of all seed material, in Ireland – 55%, in France – 73%. It should be noted that in modern conditions, the cooperative movement is characterized by tendencies to diversify the activities of various cooperatives, deepen ties between them, combine several functions of economic service of farms within one cooperative organization.

All farms in Japan, with few exceptions, are members of agricultural cooperatives organized in each district. The functions of cooperatives are diverse and include collection and sale of products, purchase and sale of production materials and consumer goods, construction, and management of enterprises for processing and marketing of agricultural products, banking, and insurance operations – receiving savings and loans, life insurance and in case of illness, provision of hospital and resort services.

The National Agricultural Cooperative Federation of the Republic of Korea (NACF), with annual revenue exceeding USD55 billion, unites more than 80% of the country's farmers or 2.5 million people.

About 70% of rural residents of Israel are members of agricultural cooperatives – kibbutzim, moshavah shittufi, moshavah ovdimah. Cooperatives account for about 75% of cultivated land, including 41% of kibbutzim, 29% of ovdim moshavs, and 4% of shittufi moshavs. At the same time, they account for about 80% of agricultural products produced in the country and own 75% of fixed production assets.

The Food and Agriculture Organization of the United Nations (FAO) recognizes the crucial role of cooperatives and other farmers' organizations in supporting small agricultural producers.

Scientific support and staffing in industrial agriculture

The share of knowledge-intensive products and expenditures on science in total GDP are the main indicators of a knowledge-based economy.

In developed countries, the share of RD&E costs is on average 3% of GDP (in Sweden – 3.8%, Finland – 3.5%, Japan – 3.04%, Switzerland – 2.73%, USA – 2.84%, Germany – 2.44%). At the same time, government share in these expenditures is on average 25-34%.

RD&E expenditures per capita in developed economies are as follows: in the USA – USD892, Sweden – USD875, Finland – USD726, Switzerland – USD688, Iceland – USD613, Germany – USD580, Denmark – USD541, Norway – USD479, France – USD478, Russia – USD420, and in Kazakhstan – USD10.27/ person (KZT82 billion with a population of 19 million people), which is 86.8 times less than in the USA and 40.9 times less than in Russia.

In developed countries, the share of new or improved technologies, products, equipment containing new knowledge or solutions accounts for 70 to 85% of GDP growth, since the introduction of technological innovations is carried out on an ongoing basis: Germany – 71.8% of enterprises, Belgium – 53.6%, Estonia – 52.8%, Finland – 52.5% and Sweden – 49.6%, and Kazakhstan – less than 1%.

Land resources

Governments regulate land relations in all countries of the world.

In particular, a number of countries legislatively prohibit the division of agricultural land into plots smaller than a certain size in order to prevent fragmentation of agricultural land, while others limit excessive concentration of agricultural land to prevent land latifundia. Many countries also require that buyers or tenants of agricultural land live in the neighborhood to have control over the property.

In Denmark, individuals have the right to use agricultural land only if they have professional training, are not older than 50 years, and have the necessary capital.

The experience of most economically developed countries testifies to the widespread practice of limiting the maximum allowable size of agricultural land plots. In Denmark, the maximum possible area is 150 hectares, acquisition of a larger land area is allowed only with a special permit (to obtain one, it must be proved that such an amount of land is needed due to the specifics of production). Restrictions on the maximum possible areas of agricultural land are also in place in Italy, Norway, New Zealand, and other countries. Such a regulator is also available in Russian legislation, and, considering the diversity of natural, economic, and other factors in the regions for each subject of the Russian Federation, this is determined by its legislation.

Restriction of unjustified excessive division of land plots, which can lead to fragmentation of plots, overlapping, wedging, and other inconveniences, is put in place to ensure rational land use. The relevant norms are available in the legislation of Spain, Italy, Norway, Germany, and other countries. In Russian legislation, along with the maximum possible size of the total land area, this is regulated in detail by the laws of the constituent entities of the Russian Federation.

Digitalization of industrial agriculture

Germany takes the first place in agriculture digitalization in Europe and pays special attention to laying the groundwork for the digital transformation of agriculture. For almost two decades, precision agriculture and smart farm systems have been practiced in Germany.

The "Smart Farming" Irish state program was launched in 2014. Sole entrepreneurs in a specific field of agricultural production are offered various options for using digital technologies and platforms that can reduce costs and harmful emissions. Currently, 1,900 farms are engaged in the program. Savings in each of them averaged EUR5,000 in 2018, fuel consumption decreased by 10%. Smart farming, as noted by Swiss scientists, reduces the harmful impact of agriculture on the environment by minimizing or correctly applying fertilizers and pesticides.

Farmers receive information based on Big Data analytics: data sources from fields, farm animals and machines based on various registrars and the Internet of Things; data storage organization; artificial intelligence and machine learning methods for processing data and turning it into information. The same data and information can be used elsewhere, for example, by authorized bodies that need information for control and management.

The latest trend in the digitalization of industrial agriculture is digital platforms for commodity distribution chains which allows to balance the supply of food to the market, ensure traceability (safety) of products, optimize logistics costs and intermediary services.

State support

State regulation of industrial agriculture is a worldwide practice and is applied in all countries. At the same time, the priority direction of most countries is comprehensive support for producers using various economic levers (compensation of production costs, price support, subsidies for the production structure, implementation of various programs). However, forms and methods aimed at creating a favorable environment for ensuring sustainable functioning in industrial agriculture differ from each other depending on the specifics of industrial agriculture development, as well as on the natural and climate conditions of each country. In the USA, the profitability of agricultural production is subsidized, and in European countries subsidies are issued for every hectare of farmland. There are countries, the so-called Cairns Group, located in the subtropical zone, where government does not subsidize agriculture at all. At the same time, in many developed countries, much attention is paid to indirect agriculture support. This includes, first of all, the training of farmers through state programs for the dissemination of knowledge. Many countries finance measures to improve the quality of manufactured products, ensure veterinary supervision, introduce scientific and technological progress, protect the environment, stimulate production in problem areas, and ensure a minimum level of income for small farms.

In foreign countries, funds to support prices occupy the largest share of government subsidies. Government regulation of prices in almost all countries with a developed market economy provides for the establishment of upper and lower limits of price fluctuations and the indicative price that the government seeks to maintain, as well as the purchase and sale of non-perishable products to maintain the required price level.

In general, a review of international practices shows that there are prerequisites for the transition to resource-saving and organic technologies aimed at improving the ecological situation and preserving the environment, creating a solid feed base that will ensure the development of animal husbandry in Kazakhstan.

In addition, Kazakhstan needs to learn from the experience of creating sales cooperation and creating infrastructure for agriculture, as well as take measures to ensure the consistency of state support measures for agriculture and increase financing of agricultural science.

4. Sector development vision

Climate change and water scarcity have a direct impact on the ability to ensure food security and achieve sustainable development. Climate change leads to a change in the culture of agriculture, technologies in animal husbandry.

According to experts, there is a risk of water scarcity in Kazakhstan, and by 2050 the country may be on the list of states of catastrophic water stress. This, in turn, will have an impact on the

socio-economic development of the country. In particular, this situation will have the greatest impact on the development of industrial agriculture, since the yield of some crops will decrease by 9-47% to the current level by 2030, and this directly affects labor productivity indicators and food security matters.

The main factor in minimizing these risks are "green" technologies and sustainable production, including effective resource management, modernization of existing and development of new infrastructure, improving population welfare and the environment through real measures to reduce environmental impact.

Therefore, the priorities of industrial agriculture development until 2030 will be:

transition from raw export to processed products, given the significant potential of agriculture for the production of raw materials and the limits of the domestic market. The growth of processing industries due to an increase in export volumes will ensure both qualitative growth of agriculture and income growth along the entire value chain.

diversification of production and compliance with crop rotations, which will ensure transition to the production of highly profitable crops, including forage crops, and, accordingly, transition to the development of intensive animal husbandry by intensifying awareness work among land users, strengthening control over compliance with land legislation, remote sensing technology to determine the species composition of plants in the fields, as well as improving agrochemical service systems for agricultural production and revision of approaches to conducting agrochemical soil surveying.

in the face of pandemic threats, the priority will be to ensure the country's food independence for the implementation of import-substituting investment projects for the main types of food;

industrialization of agricultural production through measures for qualitative strengthening of technical equipment in industrial agriculture, compliance with science-based agricultural technologies, strengthening of scientific support and introduction of innovative developments, establishing a staffing system in accordance with the real needs of the sector.

development of modern infrastructure in industrial agriculture, including development of veterinary and phytosanitary safety systems; systems for harvesting and storing agricultural products; development of financial and insurance infrastructure of industrial agriculture.

the catalyst for productivity growth and quality of agricultural products increase based on the use of reserves of vertical and horizontal integration will be development of ecosystems in priority areas of industrial agriculture.

Considering international practices, as well as global industrial agriculture development trends, domestic agriculture will be focused on stimulating competitiveness and resilience of the sector to global challenges. A legislative framework stimulating these processes will be created, the efficiency of the state support system will be increased, an effective system of knowledge dissemination will be formed, which will create conditions for increasing the incomes of rural residents.

The structure of agricultural production will be based on competitiveness, balance in accordance with the needs of foreign markets and obtaining the greatest benefits from the production of agricultural products.

The reforms of the agro-industrial sector will be based on:

reorientation of the policy of associated costs to achieve long-term competitiveness of the industry;

focus on knowledge and digitalization as productivity drivers;
shifting the focus from individual industries to value chains.

The government will continue its policy of commitment to open trade and investment, which allows stimulating growth through increased competition, preference for more productive enterprises and ensuring accelerated technological renovation.

In order to reduce shadow economy in agriculture, measures will be taken to digitalize the industry, including introduction of a traceability system for agricultural products. In addition, given that most of the untraceable products are produced in private subsidiary farms, the law "On private subsidiary farms" will be come into force to stimulate (subsidizing cooperatives when purchasing agricultural machinery and equipment) personal subsidiary farms to unite into cooperatives and, accordingly, the cooperatives will keep records of the products produced by them, and pay taxes accordingly. These measures will minimize the "gray" turnover in agriculture.

Horticulture

There will be a sustainable intensive crop production with high and stable yields and profitability adapted to climate change.

High economic efficiency of utilizing production factors will be achieved by:

diversification of areas under crops;

increasing the use of high-quality domestic seeds;

expansion of irrigated land areas and widespread introduction of water-saving irrigation technologies;

accelerating equipment and tractor fleet renovation.

Animal husbandry

Increasing sustainability of livestock development based on a solid feed base, genetic potential of livestock and introduction of modern technologies based on the principles of green growth by:

introduction of advanced technologies for livestock reproduction, increasing the productivity of pasture lands and new pasture development;

training of specialists for the livestock industry on the basis of new educational programs;

teaching small and medium-sized farms the best sustainable farming practices and technologies;

development of environmental monitoring in the sector, in particular, for greenhouse gas emissions;

ensuring epizootic well-being;

development of export markets of livestock products;

creating conditions for private veterinary services market development;

development and implementation of information systems and automation of processes and documentation in the field of veterinary medicine;

salary increases for veterinary specialists.

In order to effectively develop the livestock industry, there will be roadmaps for meat and dairy cattle as well as sheep and poultry farming breeding developed.

In beef cattle breeding, the roadmap will include indicators and activities to create family and training farms (model farms that will be equipped with modern technologies for training farmers), to provide farmers with breeding bulls to improve the genetics of out-bred animals, to create a chain of industrial slaughter - production finished products - deep processing of products, processing of hides,

rational use of pastures, broad training of farmers, market development for a stable growth of beef exports;

in sheep breeding, measures will be taken to improve the quality of sheep through breeding, family sheep farms, development of sheep breeding through the development of pasture lands; processing of hides and wool, increasing the export potential of mutton and lamb;

in poultry farming, the activities will be aimed at breeding highly productive and technologically advanced crosses (breeds) and hybrids of various types of poultry, creating modern quadric breeding farms and parent herds, increasing the productivity of meat and egg laying strain, increasing the volume of cooled meat and ultra-processed foods.

In addition, there will be work carried out to introduce effective breeding methods, stimulate selection and breeding in horse breeding and camel breeding in farms through state support, as well as improve the quality of existing livestock, production, and processing of products.

Processing of agricultural products

High economic efficiency of processed production factors will be achieved by:
improving the quality of agricultural raw materials;
modernization of the material and technical resources of processing enterprises;
product line extensions;
subsidizing the interest rate on loans;
introduction of waste-free recycling technologies;
construction of new production facilities.

In order to effectively develop the agricultural processing industry, a roadmap for the development of agricultural processing will be developed. Within the framework of the Roadmap, measures will be provided to create and modernize processing industries by subsidizing part of the costs of investment investments and subsidize the interest rate on loans for replenishment of fixed and working capital, increasing export potential of processing agricultural products by opening new markets.

Market development

Saturation of the domestic market with domestic food products.

In order to promote domestic agricultural products in the domestic and foreign markets, it is necessary to take measures to increase its competitiveness by:

developing a network of trade and logistics infrastructure, wholesale distribution centers;
eliminating trade barriers in foreign markets and expanding sales markets, especially at the expense of state patronage.

Technical equipment

Increasing the rate of renewal of agricultural machinery by further implementing the following support measures:

stimulating the acquisition of agricultural machinery (including domestic) by farmers through implementation of investment subsidy programs for part of the cost of purchased agricultural machinery, funding development institutes of “Baiterek” NMH JSC for the implementation of leasing programs;

subsidizing the lending/leasing interest rate of agricultural machinery;
developing concessional lending programs;

creating a single integrated database for accounting processes related to agricultural machinery (purchase, leasing, use, technical condition).

Agricultural cooperation and industrial agriculture infrastructure

The vision of agricultural cooperation development is based on the development of value chains through strengthening the links in the chain between farmers, processors, and consumers, as well as on the development of platforms and institutions for the dissemination of innovations, training, quality management, and access to the market of so-called ecosystems.

An ecosystem is a continuous interaction of links in industry chains based on an anchor strategic enterprise, usually processors of agricultural raw materials.

The ecosystem includes:

anchor company (strategic investor, agricultural raw materials processing company);

ACPs (feedlots, reproducers, greenhouses, etc.), PSFs that provide the anchor company with raw materials and feed;

sales markets (WDCs, TLCs, traders);

procurement organizations, product storage facilities;

manufacturers of seeds, fertilizers, pesticides, machinery;

scientific and educational organizations;

veterinary and phytosanitary support.

The main criteria characterizing an ecosystem (to be determined for each ecosystem separately) will be:

volume of production of agricultural products;

number of involved family and farms;

jobs.

Large food ecosystems will be formed for the production and processing of meat, fruits, vegetables, sugar, cereals, oilseeds, dairy products.

Anchor enterprises will be located in accordance with natural, climate and economic factors as follows:

production and advanced processing of grain crops with a capacity of 300 thousand tons in the North Kazakhstan region;

15 thousand tons production and processing of lamb and 20 thousand tons production and processing of beef in Almaty and Aktobe regions;

700 thousand tons production and processing of oilseeds in Akmola, East Kazakhstan and North Kazakhstan regions;

204 thousand tons milk production and processing in Almaty, Pavlodar, and North Kazakhstan regions;

5 thousand tons production and processing of fruits and vegetables in Zhambyl region;

5 thousand tons fruit production and processing in Almaty, Zhambyl and Turkestan regions;

150 thousand tons sugar production in Almaty and Zhambyl regions.

Step-by-step reflection on how 7 large ecosystems are formed will be provided on the information platform, there also will be monthly posts on the website of the Ministry of Agriculture about the stakeholders involved in the process of creating ecosystems.

The infrastructure or agricultural service sector in Kazakhstan should be based on cooperatives of agricultural producers and associations of these cooperatives.

It is necessary to start with cooperatives of personal subsidiary farms as they account for almost half of the industry gross output. Moreover, PSF cooperatives should be established in each rural district. Initially, it is desirable to create pilot cooperatives in 30-60 rural areas of 3-6 districts of 2-3 regions.

The functions of cooperatives should include:

- harvesting, storage, primary processing, storage, wholesale of agricultural products;
- providing its PSF members with commodity and material values necessary for the production of agricultural products - seeds, fertilizers, pesticides, FO&L, compound feeds, etc.;
- rendering veterinary medicine services, mechanization, melioration, forage harvesting, etc.;
- advising on new breeds, varieties, technologies, changes in legislation;
- bringing state support measures.

At the second stage, cooperatives of small peasant farms will be created at the level of rural areas with the same functions as those of PSF cooperatives. Moreover, at this stage it is necessary to start creating district associations of rural PSF cooperatives to perform more specific tasks: create processing enterprises, provide specialized services, for example, veterinary services, plant protection, etc. District cooperatives also include cooperatives of small peasant farms.

At the third stage, cooperatives of medium and large agricultural producers will be established on a regional level. Regional associations of district cooperatives will be created at the same stage.

The following state support measures are needed to stimulate cooperation:

- investment subsidies for the cost of equipment purchased by cooperatives to serve their members;
- subsidizing the cost of services provided by cooperatives to their members;
- budgetary financing of measures for the dissemination of knowledge – information and marketing support for members of cooperatives.

Acceleration of renovation of agricultural machinery and equipment in small peasant and private subsidiary farms and their cooperatives will be facilitated by an increased investment subsidy rate of up to 50% for 60 CV tractors and trailed/mounted equipment aggregated with tractors of this type.

Special attention needs to be paid to the development of rural areas, especially, social and engineering infrastructure of rural settlements. The harmonious development of rural areas (infrastructure, leisure, quality of life) is as important as soil fertility, technology, science, and subsidies.

Scientific support and staffing in industrial agriculture

Unlocking the potential of agricultural science by:

- scientifically based priority and task setting for technological modernization of industrial agriculture considering the socio-economic significance based on international practices;
- targeted financing of fundamental and applied scientific programs in industrial agriculture focused on business needs;
- increasing the financing of agricultural research (at least 1% of the agricultural GO);
- stimulating the innovative activity of agricultural enterprises;

co-financing by businesses and the development of a mechanism for subsidizing their costs for applied RTPs;

development of a system of commercialization of the results of applied scientific and technical programs and royalty mechanisms;

introduction of industry grant funding for applied research;

modernization of the material and technical base of HEIs, RIs, EPFs, AES;

development of knowledge dissemination systems, transfer, and commercialization of RSTDs and royalty mechanisms.

Land resources

Reduction of the withdrawal period of unused agricultural land from 2 years to 1 year for the purpose of rational and efficient land use.

Development of standards for the maximum size of agricultural land that can be owned and used by citizens of the Republic of Kazakhstan.

Digitalization of industrial agriculture

Digitalization of industrial agriculture will become a ubiquitous tool for solving farmer's problems with access to agronomic and market information, as well as debt and trade financing.

Automation of public services and processes will allow to receive subsidies and services in electronic format without leaving home.

A traceability system of agricultural products will be introduced with the construction of a single commodity distribution network based on a single national platform with information services for agricultural producers.

A unified state subsidy system will be created where state support measures will be provided free of charge.

State support

Specialization of regions will be ensured when providing state support to industrial agriculture which will be used as a base where large-scale zones of production of certain types of agricultural products will be established. This will allow for differentiated and more effective implementation of state policy depending on natural, climate and other factors.

Work will also be carried out to revise the credit policy of “Baiterek” NMH JSC, which should also consider the specialization scheme.

The specialization scheme will not prohibit production of any other products that are not provided for in it, however such production will not be covered by state support measures.

Further development and improvement of existing state support measures are planned, namely: preservation and further improvement of taxation;

further expansion and improvement of concessional lending instruments, leasing programs, increasing their availability for agricultural entities;

continuation of forward purchase of agricultural products to stimulate the cultivation of priority crops, formation, and maintenance of a reserve stock of grain, feed stock, stabilization funds for socially significant food products;

continuation of financing for the implementation of spring field and harvesting activities of industrial agriculture subjects within the framework of a short- and medium-term budget loan;

continuation of measures to combat pests and quarantine facilities, especially dangerous diseases of farm animals, dissemination of knowledge at the expense of the state, as well as further improvement of their mechanisms;

improvement of agricultural insurance;

improvement of subsidy mechanisms and introduction of new forms of state support;

stimulating new production facilities;

continuation of measures to develop agricultural science and training of personnel for industrial agriculture sector.

In order to ensure transparency in obtaining state support measures, it is necessary to open access to the information of subsidiaries of “Baiterek” NMH JSC and JSC “NC “Food Contract Corporation” to external state audit and financial control bodies, which constitute banking secrecy, by including in the rules, model contracts, internal regulatory documents relevant norms providing for consent the recipient of state support for the disclosure of bank secrecy. At the same time, this condition should be ensured at all levels of the state and quasi-public sector.

5. Basic principles and approaches of development

Principles of the Concept Note of Industrial Agriculture Development of the Republic of Kazakhstan for 2021 - 2030

balanced sustainable development: efficient production, conservation of natural resources and development of human capital;

risk accounting, consistency and continuity of agricultural policy, cumulative effect of industry support;

principle of inclusiveness: the state creates and maintains appropriate conditions for agricultural producers, regardless of size and organizational form, to be equal market participants;

creating universal conditions for all bona fide market participants;

availability of new knowledge for ACPs agricultural enterprises;

anti-corruption mechanisms for public services based on digitalization and quality control

Priorities of industrial agriculture development for 2021 - 2030

ensuring food security and improving product quality;

creating 7 sustainable food ecosystems;

optimization of support mechanisms, focus on competitive products;

enhancing attractiveness of the industry by utilizing technology, digitalization, environmental friendliness, and human capital development;

creating a unified system aimed at the needs of industrial agriculture: science



training of personnel



dissemination of knowledge (laboratory



auditorium



field);

development of the commercialization and transfer system;

reasonable allocation of resources for research and extension based on the quality of the performers' competence and their proposed approaches to addressing the tasks;

development and strengthening of phytosanitary and veterinary services;

effective land use and water use systems for agricultural production;

growth of income and life support systems among the rural population, development of rural infrastructure;

building sustainable production and sales chains.

Horticulture

In order to increase the workload of processing enterprises, increase the volume of exports of competitive products, expand the feed base of the livestock industry, real diversification in crop production shall be ensured which implies optimization (reduction) of the areas under monocultures, water-intensive crops (rice, cotton) and expansion of alternative highly profitable crops (oilseeds, legumes, cereals, grain, vegetable, fodder, etc.), which will contribute to an increase in their production.

Diversification will be ensured by intensifying awareness work among land users and strengthening control over compliance with the requirements of land legislation.

Control strengthening will be achieved through introduction of foreign methods of decoding satellite images, Earth remote sensing technology to determine the species composition of plants in the fields, as well as improving the system of agrochemical maintenance of agricultural production with revision of approaches to conducting agrochemical soil survey.

In order to increase the use of fertilizers, state support for subsidizing the cost of mineral fertilizers will be continued, subsidies for the purchase of organic fertilizers of industrial production will be introduced, distribution network of mineral fertilizers will be developed, the range of domestic fertilizers will expand. The function of the authorized body in the field of industrial agriculture development will be legislated to establish tariffs for paid types of services provided by a state institution in the field of agrochemical services of agricultural production.

Considering that there is a problem of reducing the availability of seeds among the main types of agricultural crops, as well as a low percentage of domestic seeds of some crops (rapeseed, sugar beet and vegetable crops, for which the deficit is more than 90%), a number of measures will be taken in seed production, which are aimed at providing agricultural producers with seeds of high reproductions of domestic production.

A coherent network of seed farms and a digital seed traceability system will also be created.

Variety testing network will be upgraded to an international level and equipped with modern DNA equipment, which will allow introducing highly productive varieties into agricultural production by increasing the efficiency and quality of state variety testing.

In order to develop irrigated agriculture, water resources will be saved through the widespread water-saving irrigation technologies, as well as the activities of the hydrogeological and reclamation service will be improved by improving the material and technical resources and expanding their area of activity when monitoring irrigated lands.

The analysis shows that material and technical resources of hydrogeological and melioration services do not allow to fully provide an agromeliorative survey, since the availability is 30% of the natural norms for monitoring and assessing the reclamation state of irrigated lands (the material and technical resources have not been renovated for over 10 years). At the same time, all fixed assets of hydrogeological and melioration services have 100% wear, buildings and structures, vehicles are in critical or in inadequate technical condition.

The currently implemented project for production of irrigation equipment will also be aimed at this.

In order to address the problem of fleet deterioration, which averages about 76% (80% for tractors, 72% for combines), large-scale implementation of programs for subsidizing the purchase of agricultural machinery, preferential leasing, considering measures to stimulate the development of domestic agricultural machinery, will continue.

A unified approach will be provided for subsidizing the purchase of agricultural machinery with uniform cost limits for all categories of agricultural machinery

Revision and updating of marginal cost limits within the framework of investment subsidies will make them more accessible to a wider range of recipients, including small farms.

Transition to organic farming will be achieved mainly through the introduction of "green" technology into production, the use of organic fertilizers and biological methods of plant protection.

A roadmap for the development of organic agriculture will be approved. A pilot program to support environmentally friendly export-oriented agriculture is being implemented in Almaty and Zhambyl regions.

The issue of regulation of bioagents (entomophages) and the expediency of classifying the activities of individuals and (or) legal entities associated with the industrial breeding and sale of bioagents (entomophages) as regulated species, for which a permit is required, will be considered. Measures will also be taken to introduce traceability of the plant protection products movement.

Phytosanitary safety will be ensured by restructuring monitoring systems, forecasting, organizing, and conducting field events of phytosanitary treatment, reforming the structure of the service, as well as monitoring and assessing the phytosanitary situation, increasing the competence of state bodies of inspectors and participants of industrial agriculture in the field of food and phytosanitary safety, quarantine, and plant protection.

Measures will be taken to legislatively assign the functions of controlling the circulation of genetically modified seeds and planting material to the department of the authorized body.

Digitalization of the phytosanitary risk management system will be carried out, which will help solve the issues of forecasting, control, supervision.

As part of the modernization of the phytosanitary service, the issue of switching to paid quarantine and phytosanitary examinations will be considered.

An information system of phytosanitary traceability will be introduced, which provides for the automation of the collection and digitization of data on the survey, monitoring of locust and other pests, diseases and weeds, the results of quarantine phytosanitary control and supervision, the imposition of quarantine zones, etc. In order to eliminate the risks associated with untimely treatments against locust pests and prevent losses associated with their spread, the transfer of services for carrying out treatments against locusts to the state monopoly will be carried out, and

measures will be taken to retrofit the "Phytopsanitary" RSE with the necessary material and technical means, the competence of the Ministry of Agriculture will also be provided to determine the list of harmful and especially dangerous harmful organisms, the fight against which will be carried out at the expense of budgetary funds.

The phytosanitary service and subordinate organizations will be reformed to eliminate duplication and a clear distinction between the functions performed among subordinate organizations.

In order to prevent the circulation of counterfeit and unregistered pesticides in the country, measures will be taken to regulate the procedure for the seizure and destruction of such pesticides, as well as to strengthen the responsibility of individuals and legal entities.

In order to create conditions for the domestic industrial agriculture, detailed roadmaps will be developed for certain areas of crop production, including those aimed at solving problems of low diversification, breeding and seed production, lack of seeds of domestic breeding, deterioration of soil fertility, use of water-saving technologies for irrigation, technical and technological equipment of the industry, etc.

Diversification will provide for an increase in the production of highly profitable, in-demand crops, which will also be aimed at import substitution and saturation of the domestic market. Regional akimats, the NASEC and the Ministry of Agriculture will conclude memoranda on the diversification of the acreage of agricultural crops, which will provide specific indicators for the areas of the main crops, including oilseeds (sunflower, soy, safflower, flax, etc.), grain (barley, oats, etc.), legumes (corn, peas, etc.), fodder and other crops.

Animal husbandry

The increase in the specific weight of forage crops in crop rotation will be achieved as part of measures to diversify crop production.

In order to improve breeding, methods of DNA analysis and genomic animal evaluation will be widely introduced into production.

Systematic measures will be taken to accelerate the development of beef cattle breeding using the experience of developed countries and involving a strategic multinational company in this process.

The share of government spending on supporting investments focused on the conservation of aquatic and biological resources will gradually increase in order to ensure sustainable development of animal husbandry, as well as in order to increase efficiency of natural resources use, reduce environmental impact.

A large-scale training program for farmers will be conducted and consulting support will be provided to bring international best practices and technologies of farming for maintaining and caring for animals, effective feeding and forage harvesting, modern methods of breeding and artificial insemination, improving the quality and safety of products, sustainable pasture management and other relevant practices.

Degraded pastures will be restored through their fundamental and superficial improvement, improvement of grazing practices and involvement in circulation of unused pasture lands due to their watering by further improving existing state incentive measures and applying new approaches to increase their effectiveness.

In order to remove existing barriers of livestock exports state protection will be strengthened, at the same time, capabilities of a strategic multinational company that has expressed a desire to invest in the meat industry will be utilized to the maximum.

Development of dairy farms and poultry production facilities network will continue in order to reduce import dependence.

Veterinary system will be reformed.

In particular, arrangements will be put in place to develop the market of private veterinary services. It is also planned to delineate the powers between the levels of government (central, regional). Moreover, responsibility of veterinarians and salaries of veterinarians will be increased, as well as personnel training.

Digitalization of processes, automation of data collection and transmission will be carried out in veterinary sector.

In order to develop domestic animal husbandry, detailed roadmaps will be designed for the development of meat and dairy farming, sheep breeding, poultry farming, as well as other areas of animal husbandry, including measures aimed at addressing the problems of a solid feed base, breed transformation, etc.

Processing of agricultural products

Subsidizing of investment costs, interest rates on loans for replenishment of working capital and leasing of equipment for processing enterprises, the cost of certain types of agricultural raw materials purchased for processing, including for the production of products of deep processing, will continue.

The rules of subsidization will provide for norms that encourage agricultural producers to hand over products to processing enterprises as a priority.

Detailed roadmaps will be developed for processing of certain types of agricultural products, including meat, milk, grain, fruits, vegetables, etc., aimed at solving the problems of underutilization of capacities due to limited volumes of high-quality raw materials and shortage of working capital, moral and physical depreciation of fixed assets, etc.

Market development

Development of food storage and distribution infrastructure will be ensured via construction of wholesale distribution centers (WDCs) and vegetable storages. In general, within the framework of the national commodity distribution system, it is planned to create a network of WDCs using the mechanism of a public-private partnership.

The elimination of trade barriers, the harmonization of veterinary and phytosanitary requirements will be achieved through the intensification of negotiation processes with potential importers, foreign partners, as well as participation in the work of international organizations (WTO, OIE, IPPC, Codex Alimentarius Commission, FiBL and IFOAM).

Implementation of international quality standards and certification will continue.

Technical equipment

The acceleration technical fleet renovation will be carried out by improving the measures of state support for purchase of agricultural machinery, especially by updating the cost limits of subsidizing agricultural machinery in the current passports of the investment subsidy program, increasing the share of localization of domestic agricultural machinery production, development, and expansion of preferential lending programs for domestic machinery.

Agricultural cooperation and industrial agriculture infrastructure

The key tool for increasing production efficiency will be two mechanisms of cooperation of organized farms: horizontal cooperation and vertical (anchor) cooperation. PSFs can participate in cooperation as business entities in the forms of SP, PE, FE.

As part of these events, the experience of the Zhambyl region will be scaled up to increase the incomes of the rural population through the cooperation of personal subsidiary farms through the participation of social and entrepreneurial corporations in them to provide financial support.

Cooperation development centers will play an important role in the development of cooperation, whose functions will include social, economic, and cultural support for cooperatives, including their constant, full support, and support.

A draft law "On private subsidiary farms" will be developed, defining the status of PSFs. The adoption of this bill will allow to regulate the relations arising in the management of PSFs, to ensure the rational use of agricultural land, as well as to expand the access of PSFs to state support measures.

In order to develop cooperatives, a project on institutional strengthening of credit cooperatives and MFOs in terms of financing new agribusinesses will be launched.

Scientific support and staffing in industrial agriculture

Sufficient annual state funding for agricultural research will be provided (at least 1% of the agricultural GO).

A permanent, professional system for determining priorities and tasks of technological modernization of industrial agriculture, represented by situation center of the Ministry of Agriculture, will be created.

The center of technological competencies in industrial agriculture will be launched to support the "AgriTech" platform.

A system of commercialization of RSTDs in industrial agriculture will be developed.

A national system of knowledge dissemination will be built with a high coverage of agro-industrial entities.

Modernization of the infrastructure of HEIs, RIs, AES and EPFs will be carried out.

A system of incentives for agribusiness entities using modern technologies will be developed.

Infrastructure and educational programs of HEIs will be modernized, including in partnership with leading foreign HEIs and agribusinesses.

The cost of government educational order for three-stage training (Bachelor's, Master's, PhD) will be adjusted on an ongoing basis, based on the actual costs of implementing the relevant programs.

A program of modernization of competencies in the field of agriculture will be developed and implemented for each college. Educational programs at vocational institutions and universities will be synchronized, transfer of competencies from universities to vocational institutions will be expanded.

It is planned to introduce subsidies for agricultural entity costs tied to scientific developments which will create additional economic incentives for the introduction of modern technologies and innovations.

Land resources

The land use legislation will be improved to simplify procedures for the provision of land plots, minimize interaction between service recipients and civil servants by digitalizing services in the field of land relations, and availability of information about vacant land plots.

Central authorized body will be assigned with coordinating and directing the activities of agencies in the area of land relations.

Considering international experiences in specialized services for qualitative state analysis of land resources and effective land management system, it is proposed to create a specialized cluster soil service in the form of a republican state enterprise on the right of economic management as part of the Ministry of Agriculture by transferring functions for soil and geobotanical survey, monitoring of land and determining the soil quality with material and technical recourses.

At the same time, modern methods of analysis and combating desertification and soil erosion will be introduced, considering methods of Earth remote sensing and digitization of state land cadaster data used in geoinformation systems of state bodies.

Digitalization of monitoring over obligations by the subjects of industrial agriculture on the rational use of agricultural land will be addressed.

To do this, a map of farm fields will be monitored with an indication of the crop rotation scheme. Such an obligation of farmers will strengthen their responsibility and observe crop rotations, in addition, electronic uploading will allow to track the alternation of crops and diversify agricultural production with an increase in the share of highly profitable and forage crops.

Digitalization of industrial agriculture

A project will be implemented in order to build a complete chain of crop traceability to develop and implement a system of crop production facility certification based on a new system (CrIS), following the example of IAA, which will ensure control and safety of transported products both within the state and within the import of products.

In addition, an RMS – risk management system - will be implemented within the CrIS framework in order to simplify the movement of products and transparency of inspections and examination of quarantined and veterinary products. It will allow using machine learning to determine the frequency and accuracy of inspections and examinations of transported products.

Introduction of precision agriculture in livestock and crop production areas will continue and the task of scaling the project of "digital" farms in all regions of the country will be set.

Problems with the need for personnel for "digital" farms will continue to be addressed. At the initial stage, modern disciplines will be included in the curricula of existing agricultural programs, it is planned to introduce new programs in the long term, such as "agro-information scientist", "agricultural enterprise administrator", "smart greenhouse operator", "agro-drone engineer", etc.

As part of the digitalization measures, it is planned to automate all business processes and ensure the provision of state support measures exclusively in electronic format.

Neo Nomad business game trainings will be held with a detailed demonstration of the principles of digital equipment operation, during which the task is to design a "digital" farm, make calculations for digital modernization and cost reduction, as well as determine the payback period of the purchased equipment.

State support

The current tax preferences will remain. Measures will be taken to expand preferential lending through the development institutes of “Baiterek” NMH JSC and development of credit partnerships, new areas of leasing programs.

Due to the development and implementation of new mechanisms for using the right to lease agricultural land as collateral, the availability of credit resources will increase.

With the development of the WDC network, the volumes of forward purchases will be expanded, primarily due to socially significant food products.

The volume and list of state services for pest control and quarantine facilities, as well as especially dangerous animal diseases, will be regulated considering the current phytosanitary and epizootic situation in the country and in the border zones of neighboring states.

The development of agricultural science will be ensured by increasing the level of its financing by at least 1% of the agricultural gross output.

Development and further improvement of spread of knowledge be achieved through its new national system.

Strengthening of awareness-raising activities among the subjects of industrial agriculture will develop insurance institute, and its improvement will be due to the expansion of insurance products.

Development and improvement of subsidy mechanisms will be achieved by:

interlinkages with the industrial policy of the state through the improvement of tools to stimulate technological re-equipment of agriculture, introduction of innovations;

changes in the procedure and mechanisms of subsidies to ensure their transparency, accessibility for small and medium-sized farms;

strengthening the regulatory framework, implementing an effective planning, and monitoring system;

optimization of existing subsidization areas;

simplification and digitalization of procedures for obtaining subsidies;

making counter-commitments to achieve the deliverables for certain types of subsidies;

definition of a single body responsible for the issuance and targeted use of subsidies and definition of clear priorities and measurable indicators;

introduction of financial planning mechanisms for subsidizing during the upcoming year and their alignment with the state budget.

The creation of new production capacities will be achieved through the improvement of investment subsidy mechanisms, subsidizing interest rates on loans and leasing, guaranteeing, and insuring loans, expanding concessional financing instruments, and subsidizing areas, and institutional development of the credit partnership system.

When implementing the Concept Note, funds are allocated as a priority of the state budget to achieve the indicators/deliverables reflected in the national projects of the relevant industry.

Funds will be allocated for other activities considering economic development and the potential to increase revenue.

6. Target indicators and deliverables

Target indicators:

- 1) provision with food products (including socially significant ones) is not less than 90%;
- 2) increase in exports of industrial agriculture products by __ times compared to 2020;

- 3) increase of labor productivity in agriculture by 3 times compared to 2020;
- 4) share of the unobserved (shadow) economy in agriculture, forestry, and fisheries – 0.5% of GDP;
- 5) increase in the inflow of investments into industrial agriculture by 4 times compared to 2020;
- 6) wheat yield in 2030 – 20 centners/hectare;
- 7) eroded areas of agricultural lands in 2030 is 28.4 million hectares.

Deliverables

Building infrastructure necessary for agriculture and agricultural producers, including logistics facilities and small-scale production.

Establishment of seven large ecosystems for the production and processing of meat, fruits, vegetables, sugar, cereals, oilseeds, dairy products.

Efficient use of agricultural land with an increase in the tax burden on unused plots. Acceleration of diversification of areas under crops, modernization of approaches to melioration and soil reclamation.

Introduction of mechanisms to stimulate the development of agricultural producers' cooperation – regional food hubs.

Appendix
to the Concept Note of
Industrial Agriculture development of the
Republic of Kazakhstan
for 2021 - 2030

Action plan for the implementation of the Concept Note of Industrial Agriculture Development of the Republic of Kazakhstan for 2021 - 2030

No.	Name reforms /main activities	Completion form	Completion date	Responsible parties
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1	2	3	4	5
	Target indicator 1. The level of provision with food products (including socially significant ones) is not less than 90 %; 2021 – at least 80%; 2022 – at least 80%; 2023 – at least 80%; 2024 – at least 80%; 2025 – at least 80%; 2026 – at least 82%; 2027 – at least 84%; 2028 – at least 86%; 2029 – at least 88%; 2030 – at least 90%.			Ministry of Agriculture, MNE, MF, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, “Baiterek” NMH JSC (if and as agreed), Atameken (if and as agreed)
1.	Construction and modernization of potato and vegetable storage facilities	commissioning act	2022-2025	Ministry of Agriculture, MNE, MF, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, “Baiterek” NMH JSC (if and as agreed), Atameken (if and as agreed)
2.	Purchase by "Food Contract Corporation" NC JSC of ready-made food products, including through the conclusion of an off-take contract (sugar)	offtake contract	December 2024	Ministry of Agriculture, "Food Contract Corporation" NC JSC (if and as agreed), Atameken (if and as agreed)
3.	Establishment of at least 7 large ecosystems for the production and processing of agricultural products	7 ecosystems	December 2025	Ministry of Agriculture, MNE, MF, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, “Baiterek” NMH JSC (if and as agreed), Atameken (if and as agreed)

4.	Construction of modern meat processing plants in the regions	commissioning act	December 2027	Ministry of Agriculture, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, "Baiterek" NMH JSC (if and as agreed)
5.	Construction of at least one sugar production plant	commissioning act	December 2024	Ministry of Agriculture, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, "Baiterek" NMH JSC (if and as agreed)
6.	Creation of a scientific, technological, and practical center based on a Research and Production Enterprise to support organic production ("ORGANIC" Project Office) in order to implement an integrated approach to solving systemic and operational problems of organic production in Kazakhstan: - development and approval of the Regulations on the "ORGANIC" Project Office; - preparation and approval of an action plan of the "ORGANIC" Project Office for 2022-2023	"ORGANIC" project office	March 2022	Ministry of Agriculture, Atameken (if and as agreed)
7.	Development of a new version of the Law of the Republic of Kazakhstan "On production and turnover of organic products", harmonized with the provisions and norms of international and regional documents and standards	draft Law of the Republic of Kazakhstan	December 2022	Ministry of Agriculture, MTI, MoH, MNE, MoF, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)
8.	Roadmap for the development of organic agriculture	joint order of the state bodies	April 2022	Ministry of Agriculture, MTI, MOH, MAGPR, MIID MFA, MISD, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, NAO "NASEC" (if and as agreed), Atameken (if and as agreed)
9.	Creation of a feed stock in the amount of 200 thousand tons	feed stock	January 2022	Ministry of Agriculture, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed), "Food Contract Corporation" NC JSC (if and as agreed)
Target indicator 2. Increase in exports of agricultural products by 3 times				Ministry of Agriculture, MTI,

<p>compared to 2020: 2021 – USD3.5 billion; 2022 – USD4.2 billion; 2023 – USD4.8 billion; 2024 – USD5.5 billion; 2025 – USD6.6 billion; 2026 – USD7.4 billion; 2027 – USD8.1 billion; 2028 – USD8.6 billion; 2029 – USD9.2 billion; 2030 – USD9.9 billion.</p>			<p>MIID, MoF, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)</p>	
10.	<p>Seek legislative action on: transition to paid control and issuance of permits in the field of plant quarantine; introduction of an emergency response mechanism to the deterioration of the phytosanitary situation, considering the balance of interests between businesses and the state; transfer locust control treatments to a state monopoly.</p>	<p>draft Law of the Republic of Kazakhstan</p>	<p>July 2024</p>	<p>Ministry of Agriculture, MNE, MoF, Agency for Protection and Development of Competition (if and as agreed), Atameken (if and as agreed)</p>
11.	<p>Implementation, automation, and digitization of the data collection system to survey, monitor locust and other pests, diseases and weeds, results of control and supervision of phytosanitary measures</p>	<p>commissioning act</p>	<p>December 2024</p>	<p>Ministry of Agriculture, MDDIAI</p>
12.	<p>Making suggestions towards unification of subordinate organizations of the State Inspection Committee of Industrial Agriculture, considering the assigned functions to eliminate duplication</p>	<p>information to the Government</p>	<p>December 2023</p>	<p>Ministry of Agriculture, MoF, Agency for Civil Service Affairs (if and as agreed)</p>
13.	<p>Introduction of an information system for managing phytosanitary risk and traceability</p>	<p>commissioning act</p>	<p>March 2024</p>	<p>Ministry of Agriculture, MDDIAI</p>
14.	<p>Providing all territorial inspections and phytosanitary control posts with Internet access</p>	<p>100 % internet coverage</p>	<p>December 2022</p>	<p>MDDIAI, Ministry of Agriculture</p>
15.	<p>Introduction of an information system for controlling plant protection products to exclude "gray" pesticides</p>	<p>creating an information system</p>	<p>August 2024</p>	<p>Ministry of Agriculture, MDDIAI</p>
16.	<p>Making proposals to reform</p>	<p>information to</p>	<p>2022-2026</p>	<p>Ministry of Agriculture,</p>

	veterinary system in terms of: clear delineation of functions and powers between the center and the regions; digitalization of processes, automation of data collection and transmission in the field of veterinary medicine; gradual increase in salaries of veterinarians.	the Government		MDDIAI, MNE, MoF, MES, MLSP, akimats of regions, cities of Nur-Sultan, Almaty and Shymkent
17.	Opening of export markets for agricultural products	veterinary and phytosanitary certificates	annually, until March 10 of the following reporting year	Ministry of Agriculture, Atameken (if and as agreed)
18.	Address the issue of regulating the circulation of bioagents (entomophages) and the expediency of the activities of individuals and (or) legal entities related to the industrial breeding and sale of bioagents (entomophages) to regulated species, for which a permit is required.	information to the Government	December 2025	Ministry of Agriculture, MNE, MTI
Target indicator 3. Increase of labor productivity in agriculture by 3 times compared to 2020: 2021 – KZT3,430 thousand; 2022 - KZT4,075,3 thousand; 2023 – KZT4,876 thousand; 2024 – KZT5,906,7 thousand; 2025 – KZT6 165 thousand; 2026 – KZT6 570 thousand; 2027 – KZT7 000 thousand; 2028 – KZT7,498 thousand; 2029 – KZT8,238.8 thousand; 2030 – KZT9,168 thousand.				Ministry of Agriculture, MNE, MAGPR, MoF, MIID, MDDIAI, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, “Baiterek” NMH JSC (if and as agreed), NASEC (if and as agreed), Atameken (if and as agreed)
Target indicator 4. Wheat yield: 2021 – 9.3 q/ha; 2022 – 10.2 q/ha; 2023 – 11.4 q/ha; 2024 – 12.6 q/ha; 2025 – 13.8 q/ha; 2026 – 15.0 q/ha; 2027 – 16.2 q/ha; 2028 – 17.4 q/ha; 2029 – 18.6 q/ha;				Ministry of Agriculture, MNE, MAGPR, MoF, MIID, MDDIAI, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, “Baiterek” NMH JSC (if and as agreed), NASEC (if and as agreed), Atameken (if and as agreed)

2030 – 20.0 q/ha.				
19.	Diversification in crop production, which provides for an increase in the areas of highly profitable (oilseeds, vegetables, melons, fodder) crops and reduction in water-intensive (rice, cotton) crops	an increase of the areas under oilseeds, vegetables, melons, fodder crops and a decrease of the areas under rice and cotton	2022-2027	Ministry of Agriculture, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)
20.	Diversification of area under crops through forward purchase programs	report to the MoF on the achievement of direct final results	annually, until March 10 of the following reporting year	Ministry of Agriculture, MNE, MoF, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed), "Food Contract Corporation" NC JSC (if and as agreed)
21.	Creation and implementation of seed traceability information system	commissioning act	March 2024	Ministry of Agriculture, MDDIAI, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent
22.	Modernization of the variety testing network	commissioning act	December 2025	Ministry of Agriculture, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent
23.	Adoption of legislative measures regulating Kazakhstan's accession to the International Union for the Protection of New Varieties of Plants	draft Law of the Republic of Kazakhstan	July 2024	Ministry of Agriculture, MNE, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent
24.	Address feasibility of regulating the return to the permissive (restrictive) nature of maintaining the State Register of Breeding Achievements recommended in the Republic of Kazakhstan	information to the Government	July 2024	Ministry of Agriculture, MNE
25.	Revision of the marginal cost limits of agricultural machinery in the framework of investment subsidies	Order of the Minister of Agriculture of the Republic of Kazakhstan "On amendments to the Order of the Acting Minister of Agriculture of the Republic of Kazakhstan dated July 23,	July 2022	Ministry of Agriculture, MNE, MoF, MIID, ASPiR (if and as agreed), akimats of regions and cities Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)

		2018, No. 317 "On approval of the Rules for subsidizing the reimbursement of part of the expenses incurred by the subject of industrial agriculture for investment investments"		
26.	Legislative regulation of control over genetically modified seeds, planting material and plant products	draft Law of the Republic of Kazakhstan	2023	Ministry of Agriculture, MNE, MoF, Agency for Protection and Development of Competition (if and as agreed), Atameken (if and as agreed)
Target indicator 5. The area of eroded land as part of agricultural land as a percentage of the total land area 2021 – 29.3 million hectares; 2022 – 29.2 million hectares; 2023 – 29.1 million hectares; 2024 – 29.0 million hectares; 2025 – 28.9 million hectares; 2026 – 28.8 million hectares; 2027 – 28.7 million hectares; 2028 – 28.6 million hectares; 2029 – 28.5 million hectares; 2030 – 28.4 million hectares.				Ministry of Agriculture, MNE, MDDIAI, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, NAO "Government for Citizens" (if and as agreed)
27.	Improvement of the material and technical recourses of the hydrogeological and reclamation service due to expansion of their area of activity	recommendations for improving the ameliorative condition of irrigated lands	annually	Ministry of Agriculture, MoF
28.	Amendments to the Law of the Republic of Kazakhstan "On State regulation of the Industrial agriculture development and rural areas", in part: - spending funds obtained via commercial services by republican state institutions when monitoring and assessing the ameliorative condition of irrigated lands; - consolidation of competences of the	draft Law of the Republic of Kazakhstan		

	<p>authorized body in industrial agriculture development to establish tariffs for the commercial services provided by a state institution in the field of agrochemical services for agricultural production;</p> <p>- consolidation of state support for subsidizing the purchase of industrially produced organic fertilizers</p>		<p>December 2023</p> <p>December 2025</p> <p>December 2027</p>	<p>Ministry of Agriculture, MNE, MoF</p> <p>Ministry of Agriculture, MTI, MH, MNE, MoF, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)</p> <p>Ministry of Agriculture, MNE, MoF, MIID, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)</p>
29.	Development of a distribution network of mineral fertilizers for timely provision of ACPs during the season of agricultural and technical works	established sales chain	annually, until March 10 of the following reporting year	MIID, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)
30.	Increasing the production of domestic mineral fertilizers and expanding their	acts of commissioning	annually, until January 10,	MIID, Atameken (if and as agreed)

	range	of new and modernized existing enterprises	following the reporting year	
31.	Improving the activities of the Republican research and methodological center of the agrochemical service - improvement of its material and technical resources	Order of the Minister of Agriculture of the Republic of Kazakhstan "On amendments to the Order of the Minister of Agriculture of the Republic of Kazakhstan dated March 31, 2015, No. 4-6/295 "On approval of natural norms of agrochemical service of agricultural production"	December 2022	Ministry of Agriculture, MoF
32.	Roadmap for the development of crop production, providing for the development of seed production, agrochemistry, land reclamation and improving the technical equipment of the industry	joint order of the state bodies	March 2022	Ministry of Agriculture, MNE, MoF, MIID, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)
33.	Development and implementation of improvement measures: Laws of the Republic of Kazakhstan "On livestock breeding" and "On pastures"; Rules for subsidizing the development of livestock breeding, increasing the productivity and quality of livestock products; traceability systems of breeding work.	amendments and additions to the laws of the Republic of Kazakhstan Order of the Minister of Agriculture of the Republic of Kazakhstan "On amendments to the Order of the Minister of Agriculture of	December 2023 March 2022	Ministry of Agriculture, involved state bodies, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)

		<p>the Republic of Kazakhstan dated March 15, 2019, No. 108 "On approval of the Rules for subsidizing the development of livestock breeding, increasing productivity and quality of livestock products"</p> <p>Adjustment of the Republican system of animal husbandry</p>		
			December 2023	
34.	Poultry farming roadmap development	joint order of the state bodies	March 2022	Ministry of Agriculture, MNE, MoF, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)
35.	Designing a roadmap for the development of sheep breeding	joint order of the state bodies	April 2022	Ministry of Agriculture, MNE, MoF, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)
36.	Designing roadmap for the development of meat animal husbandry	joint order of the state bodies	May 2022	Ministry of Agriculture, MNE, MoF, akimats of regions and cities of Nur-Sultan, Almaty and

				Shymkent, Atameken (if and as agreed)
37.	Designing roadmap for the development of dairy farming	joint order of the state bodies	June 2022	Ministry of Agriculture, MNE, MoF, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)
38.	Subsidizing reimbursement of expenses incurred by a national company in the field of industrial agriculture in the sale of food grains for regulatory impact on the domestic market	draft Law of the Republic of Kazakhstan	2022	Ministry of Agriculture, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, "Food Contract Corporation" NC JSC (if and as agreed)
39.	Designing roadmap for the development of agricultural products processing	joint order of the state bodies	March 2022	Ministry of Agriculture, MNE, MoF, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)
40.	Expansion existing knowledge hubs on the basis of HEIs, RIs, experimental farms, vocational institutions, and agricultural bodies, as well as conducting training seminars by foreign consultants on industrial agriculture development	report on the training of ACPs	annually, on June 20, following the reporting year	Ministry of Agriculture, MoF, MNE, MES, NASEC (if and as agreed), Atameken (if and as agreed), local executive bodies, educational organizations
41.	Scientific support of industrial agriculture through targeted grant funding	scientific and technical programs	annually	Ministry of Agriculture, MoF, MNE, NASEC (if and as agreed)
42.	Introduction of industry grants for the commercialization of scientific and (or) scientific and technical activities	commercialization projects	annually	Ministry of Agriculture, MES, MoF, MNE, NASEC (if and as agreed), Atameken (if and as agreed)
43.	Updating the content of educational programs in agricultural higher educational institutions	new educational programs	annually	Ministry of Agriculture, MES, NASEC (if and as agreed), Atameken (if and as agreed)
44.	Development of knowledge dissemination centers in industrial agriculture through a state order	report on the training of ACPs	annually	Ministry of Agriculture, MoF, MNE, MES, Agency for Protection and Development of Competition (if and as agreed), NASEC (if and as agreed), Atameken (if and as agreed), local executive bodies, educational organizations
45.	Development of digitalization transfer and commercialization of agricultural	report	annually	Ministry of Agriculture, MDDIAI, NASEC (if and as

	technologies			agreed), Atameken (if and as agreed)
46.	Establishment of a vertical sustainable land management system under the Committee or Land Administration of the Ministry of Agriculture	Decree of the Government of the Republic of Kazakhstan	2022	Ministry of Agriculture, MNE, MoF, Government for Citizens (if and as agreed), akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)
47.	Development and implementation of the state subsidy system	commissioning act	2022-2023	MoA
48.	Development of educational programs on new digital agricultural specialties	register of educational programs	until 2030	Ministry of Agriculture, MES, NASEC (if and as agreed), agricultural HEIs (if and as agreed), Atameken (if and as agreed)
49.	Target indicator 6. The share of the unobserved (shadow) economy in agriculture, forestry and fisheries is 0.5% of GDP: 2021 – 2.0 %; 2022 – 1.9%; 2023 – 1.7%; 2024 – 1.6%; 2025 – 1.4% 2026 – 1,2%; 2027 – 1%; 2028 – 0.8% 2029 – 0.6%; 2030 – 0.5%.			Ministry of Agriculture, MDDIAI, MoF, MNE, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, NASEC (if and as agreed), Atameken (if and as agreed)
50.	Creation and operation of the situation center of the Ministry of Agriculture for agricultural analysis and forecasting	situation center in industrial agriculture	2022-2030	Ministry of Agriculture, MoF, MNE, NASEC (if and as agreed), Atameken (if and as agreed)
51.	Implementation of a traceability system in industrial agriculture	commissioning act	2022-2023	MoA
52.	Automation of state support measures	information system	2022-2023	Ministry of Agriculture, “Baiterek” NMH JSC (if and as agreed)
53.	Further introduction of information technologies and digitalization in the agricultural sector ("AgriTech" technology platform)	"AgriTech" technology platform	2022-2030	Ministry of Agriculture, MDDIAI, NASEC (if and as agreed), Atameken (if and as agreed)
54.	Establishment of cooperation development centers	pilot cooperation centers	December 2024	Ministry of Agriculture, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)

55.	Development of the draft Law of the Republic of Kazakhstan "On private subsidiary farms" defining the status of private subsidiary farms	draft Law of the Republic of Kazakhstan	December 2021	Ministry of Agriculture, MNE, MoF, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)
56.	Target indicator 7. Increase in the inflow of investments into industrial agriculture by 4 times compared to 2020: 2021 – KZT824 billion; 2022 – KZT1,076 billion; 2023 – KZT1,271 billion; 2024 – KZT1,507 billion; 2025 – KZT1,799 billion; 2026 – KZT1,981 billion; 2027 – KZT2,163 billion; 2028 – KZT2,344 billion; 2029 – KZT2,526 billion; 2030 – KZT2,715 billion.			Ministry of Agriculture, MNE, MoF, "Baiterek" NMH JSC (if and as agreed), Atameken (if and as agreed)
57.	Signing of an Investment Agreement between the Government of the Republic of Kazakhstan and a multinational company	agreement	December 2022	Ministry of Agriculture, involved state bodies, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)
58.	Scaling up of the pilot project on "Increasing the incomes of rural population of Zhambyl region"	report to the MoF on the achievement of direct final results under the new budget program	2023-2025, annually, until March 10 following the reporting year	Ministry of Agriculture, MNE, MoF, akimats of regions and cities of Nur-Sultan, Almaty and Shymkent, Atameken (if and as agreed)
59.	Institutional development of the credit partnership system	draft Law of the Republic of Kazakhstan	December 2027	Ministry of Agriculture, MNE, MoF, "Baiterek" NMH JSC (if and as agreed), Atameken (if and as agreed)
60.	Financing of industrial agriculture investment projects through expanding their coverage by funding credit partnerships, microfinance organizations, second-tier banks, and other financial and development institutions	loan agreements	December 2027	Ministry of Agriculture, MNE, MoF, "Baiterek" NMH JSC (if and as agreed)
61.	Introduction of medium-term financing of agricultural entities for spring field and harvesting operations	report to the MoF on the achievement of direct final results	annually, until March 10 of the following reporting year	Ministry of Agriculture, MNE, MoF, "Baiterek" NMH JSC (if and as agreed), Agrarian Credit Corporation JSC (if and as agreed)

62.	Increase in the volume of financing of leasing programs at the expense of budgetary and extra-budgetary funds	financial leasing agreements	December 2024	Ministry of Agriculture, MNE, MoF, "Baiterek" NMH JSC (if and as agreed)
63.	Development of mechanisms to encourage recipients of subsidies to achieve deliverables with counter obligations for established indicators	orders of the Ministry of Agriculture	December 2022	Ministry of Agriculture, MNE, MoF, Agency for Strategic Planning and Reforms (if and as agreed), MIID, MDDIAI, Atameken (if and as agreed)

Note: abbreviations:

"Government for Citizens" Non-Profit JSC	- "Government for Citizens" Non-Profit Joint Stock Company
"Food Contract Corporation" NC JSC	- National Company "Food Contract Corporation" Joint-Stock Company
Atameken	- "Atameken" National Chamber of Entrepreneurs of the Republic of Kazakhstan
IA	- industrial agriculture
SICIA	- State Inspection Committee in Industrial Agriculture
MoA	- Ministry of Agriculture of the Republic of Kazakhstan
ACPs	- agricultural producers
"Baiterek" NMH JSC	- "Baiterek" National Managing Holding Joint Stock Company
MES	- Ministry of Education and Science of the Republic of Kazakhstan
MLSPP	- Ministry of Labor and Social Protection of Population of the Republic of Kazakhstan
MIID	- Ministry of Industry and Infrastructure Development of the Republic of Kazakhstan
Cattle	- Large, domesticated, cloven-hooved herbivores
Non-profit JSC	- non-profit joint stock company
MoF	- Ministry of Finance of the Republic of Kazakhstan
MFO	- microfinance organization
MTI	- Ministry of Trade and Integration of the Republic of Kazakhstan
NASEC	- "National Agrarian Science and Educational Centre" Non-commercial Joint Stock Company
NC	- national company
MNE	- Ministry of National Economy of the Republic of Kazakhstan
MDDIAI	- Ministry of Digital Development, Innovation and Aerospace Industry of the Republic of Kazakhstan
MEGNR	- Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan

[END TRANSLATION]

Attachments:

No Attachments.