

## Development of the concept of effective growth of sugar production in Kazakhstan

Daniyar Altayevich Kaldiyarov, Askar Kaliyevich Sharipov, Asel Ericovna Bedelbayeva

Zhetysu State University named after I.Zhansugurov, Zhansugurov Street, 187A, Taldykorgan, 040000, Republic of Kazakhstan

**Abstract.** The article considers theoretical and practical problems of development of beet sugar production and increase of efficiency of its functioning in the conditions of the uniform Customs union, and also the entry of Kazakhstan into the World Trade Organization. Also article describes the main problems and development of the concept of integrated solutions to many economic, organizational and legal aspects of the effective sugar industry development. Developed concept ensures effective functioning of sugar beet production in the agricultural sector.

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### Introduction

Sugar consumption per capita in the world increases every year and varies by country. On average it is about 21 kg. per inhabitant every year. Almost all the sugar is used as consumption of the population (about 95%). The remaining part is used in the pharmaceutical and chemical industries, where he goes to the production of pharmaceutical products (eg antibiotics); biotechnological products (such as citric acid and lactic acid, amino acids, vitamins and enzymes); biodegradable packaging materials and films; detergents not polluting the environment.

Questions of the sugar production from local raw is one of the priorities of any country. The largest amount of crystalline sugars found in sugar beets (up to 22% or more), and sugarcane (18%). Sugar has great economic importance as a food and raw for industry. Currently, 95% of sugar in Kazakhstan produced from imported raw sugar and only 5% of domestic raw - sugar beet. As a result, Kazakhstan essentially turned into one of the largest importers of sugar. During 2013 the volume of imports of basic food stuffs in Kazakhstan amounted to 1 093.7 million. The major share of imports occupied products such as sugar, including raw (31%), or to purchase them spent 344.3 million U.S.dollars[1].

*The need for effective development* of sugar industry due to the fact that the high import dependence on sugar Kazakhstan significantly reduces its economic security, as huge amounts of annual purchases of sugar further increase the pressure on the accumulation of foreign exchange reserves. In addition, a large volume of imports leads to the fact that Kazakhstan is to some extent not stimulate domestic and foreign producers. Therefore, ensuring the population of sugar mainly from domestic raw materials is the task of the state, which could solve the problem of food security in this valuable food product.

*Relevance* of this study is also related to the fact that the practice of work in the market economy has highlighted the numerous problems in the development of sugar industry, the solution of problems related to expanded reproduction and increase the stability of the enterprises, the introduction of scientific and technological progress and innovation, planning and management, pricing, development new mechanisms for the protection of the sugar market, and some other problems.

All marks in aggregate is the objective need for research to work out the concept of effective development of sugar industry in Kazakhstan.

### Methods

Theoretical and methodological basis of the research were conceptual provisions set forth in the scientific works of Russian and foreign scientists in the development of sugar industry in Kazakhstan.

In the process of studying the problems of agribusiness and applied the methods of dialectic system approach, generalization, comparison, prediction, abstract logic, and other methods of economic research.

Analysis of recent research and publications. The study of scientific literature showed that the most difficult question remains quantify economic efficiency. Key provisions of the institutional theory embodied by American scientists, became the basis for a revolution control the U.S. economy and other developed countries after the global crisis of 1929-1933, when the «sacred right of private property» has been replaced by a set of rights owners and law introduced the concept of effective owner. Measures taken these governments restrict the rights of property owners to «eating away» of fixed assets, their irrational use in the process. Food industry is designed to provide the population with food in various

quantities and assortments sufficient to form a proper and balanced diet. Worsening nutrition entails irreversible demographic changes, increasing social and interregional tensions, threatening the internal security of the country. Optimal distribution of industrial production in the country on the basis of sectorial specialization of industry with the aim of maximizing the use of raw material and labor resources should be considered as a fundamental principle. Sugar beet as a labor-intensive crop requires the organization of large agricultural units, crop rotation and science-based technologies, beet crop rotations and placing them in the sugar beet. In the sugar beet industry economic relations between producers and processors occupy a key position. Processing and service enterprises are reluctant to loss of a monopoly position with respect to agricultural producers in the case of unification. More successful are processes of agro-industrial complex (hereinafter - AIC), where are the integrator processors[2].

Public policy regarding the functioning of the sugar market should be built so that it focused on the environment and economic development of sugar industry. It is particularly important to reduce the dependence of the internal sugar market from imports and to reduce the financial burden on its service. The problem of effective development of sugar industry requires a comprehensive solution of many economic, organizational and legal issues, which are illuminated by known Russian scientists: V.M. Penchukov, M.I.Egorov, A.G.Pantsov and others in the development of the theory of the market made a significant contribution to the scientific works of foreign scholars such as E.Stiglitz, L.Erhard, P.A. Samuelson, W.Eucken and other studies the problems of improving economic processes in the AIC and sugar beet industry engaged Kazakhstani scientists: G.A. Kaliev, A.B. Moldashev, V.V. Grigaruk, G.U. Akimbekova, etc. Wide range of publications in the domestic industry and the economic literature relating to the functioning of the sugar beet production, do not represent systems research, and affect only certain aspects of its development, namely the resource base and the processing sector[3,4].

*The purpose of the study* was to develop a theoretical framework and methodological guidelines for the effective development of sugar industry, practical recommendations to increase self-sufficiency in the country's sugar. In accordance with this purpose were as follows:

- to deepen the theoretical study the effective functioning of the agricultural sector in the development of a market economy;
- identify characteristics of effective development of sugar industry as a complex system of

interacting agents involved in the production, processing and sales of sugar beet and sugar;

- summarize the experience of the world sugar production and propose effective measures of state regulation of the sugar market;
- to assess the current state of the level of development of sugar beet production and efficiency of the sugar market, suggest mechanisms to improve the effectiveness of measures for its protection;
- to determine the laws and principles of sustainable development of sugar industry and to formulate the main areas for improvement and rationalization of inter-industry economic relations;
- identify ways of improving state regulation of sugar industry.

Production efficiency is shown as the ratio of the effect to the costs and resources that led to its acquisition. Therefore, it involves measurement of, firstly, the magnitude of the effect and secondly the use and consumption of resources. In general terms, the production of economic effect can be defined as the final result. Conducted generalization of the theory and practice allow for the determination of the economic result of production in the AIC suggest indicators such as gross output, commodity production, gross revenue, profit[5].

Second side of economic efficiency, in our opinion, serves the measurement of costs and resources used to produce this effect. As you know, the economic resources are very diverse and heterogeneous in nature. These include:

- natural resources - land, minerals, water and forest resources, etc.;
- human resources - people with their ability to produce goods and services;
- capital in the form of money, i.e. monetary capital or means of production, i.e. real capital;
- the entrepreneurial ability of people in the organization of production of goods and services;
- scientific and technical progress.

In addition all resources are in interaction.

Thus, the final outcome is a result of the integrated functioning of a large number of heterogeneous and disparate economic resources. Food security of the population is of paramount social and political significance and is one of the most important tasks of the state. Integrated development of agriculture and food industry provides a more rational use of agricultural raw materials, reducing costs in the sphere of circulation, increasing the shelf life of products, more even supply the population with food throughout the year[6].

Sugar industry is one of the central locations of industries, providing the population and sugar consuming industry socially important food products - sugar. It is known that the problem of sugar cannot be

solved in isolation within individual industries related to the production of sugar, i.e. beet cultivation (agriculture) and its processing (sugar industry). This is only possible in the system of agriculture[7].

The concept of «effective development of sugar industry» we include:

- effective development of sugar production from the standpoint of meeting the needs of sugar from its own resources;

- social, economic and political stability in sugar beet growing regions.

Accommodation sectors of the food processing industry should be consistent with the placement of the production of other industries competing for manpower and infrastructure.

Development and deployment of the sugar industry in Kazakhstan should be based primarily on land, climatic and soil resources, contributing to expanded production of sugar beet.

More uniform distribution of production and sources of raw materials for the country to avoid excessive long-distance transport of raw materials, fuel, materials and finished products to the places of consumption. Transportation over long distances requires a significant investment in transport. As a result of increased production costs and reduced production efficiency. For the sugar industry is considered the best option for delivery of beet plants within 50-70 km. Increasing the distance of delivery leads to unnecessary costs and increase in the cost of finished products, reducing its competitiveness. To achieve high results in beet is only possible under strict agricultural technologies of sugar beet, and which requires a fairly high level of investment of financial resources in the sector of agricultural production[8].

Given these factors should form the concept of developing the resource base, establishing science-based public policy guidance in this area to make informed investment and other business decisions in terms of guaranteed availability of resources, including technological and innovative potential. In the food industry the concentration of production has the greatest value. It affects the placement primarily due to the need for large enterprises have adequate resource base. Along with the enlargement size enterprises expanding range of suppliers of raw materials. For large enterprises is much more complicated selection of items of their placement and selection of industrial sites, the implementation of measures to create infrastructure for nature protection and ecological safety of production, etc. The more the industry is concentrated in the areas of production and consumption of products, the impact is less due to reduced length of haul. The most important industry and food processing industry can be ranked according

to placement of transport factors as follows: milk, meat, flour, cereal, sugar-beet, confectionery, bakery[9].

Beet-sugar industry in Kazakhstan is one of the leading food industry. Its role in the social sphere of employment, level of income, participation in development of rural areas is high. Typically, the sugar mills are located in the center of raw sugar beet production areas to reduce the radius of its delivery to the plant. In most cases, they are located in towns with a population of 3.5-5.5 thousand people, being virtually the only industry that makes their town- and socially significant companies providing jobs for the residents of these settlements[10].

The main purpose of sugar beet production is sustainable maintenance of the country socially important food products - sugar. The main criterion for characterizing the solution to this problem is the provision of per capita consumption of sugar on the basis of recommended medical standards in the amount of 36 kg per year, as part of the ability to produce products for export[11].

Integration in the market economy, accompanied by a decrease of consumption of foods of animal origin due to their high cost, greatly improving the role of sugar in the diet of many categories of citizens, especially those with low incomes, as a source of quick energy replenishment needs because of its widespread availability and low cost.

In fact in the present conditions of the industry an ironic situation - line processing beet sugar factories are idle due to lack of raw and beet producers curtail their production due to low purchase prices offered by processors. One option for achieving a high level of self-sufficiency is the concentration of sugar beet from the nearby sugar factory farms and deepening them in sugar beet specialization. This will align the productivity of resource zones with capacity sugar factory. Formation of optimal resource zones will identify the necessary level of saturation and productivity on farm. In combination with low transportation costs for delivery of raw to the processing site that will enhance the efficiency of sugar beet production[12].

Area the size of raw sugar factory along with the above factors affect the level of specialization and area (the proportion of beet crops total arable land). Considering the specificity of sugar beet production is noted that the effective cultivation of sugar beet is unthinkable without specialization and concentration of production.

Therefore, sugar beet deepen specialization necessary given the economic evaluation of soils according to their suitability for sugar beet. Should abandon the cultivation of sugar beet, if the distance from the farm to the processing plant is more than 50

km. Ideally, it is necessary that in the area of raw produced such volume that would be enough for the sugar factory within 90-110 days[13].

The main reason is the weak development of relations among branches. As a result of sugar beet growing, transportation, storage and processing, and sales of finished products to the consumer have been marginalized. Beet cultivation - the process are expensive, required appropriate equipment and strong financial support. Therefore, many farmers have in recent years abandoned from its cultivation. In addition, they have lost markets because sugar mills reshaped sugar cane. Dependence on imported raw producers and monopoly position for some of them, have caused high domestic sugar prices, and dissociation processes of production and processing of sugar beet prevents the development of the sugar complex. Using organizational and legal forms of association Profit type does not allow for entrepreneurial activity[14].

There are certain difficulties in the sugar factories: particularly in the processing of raw and the improvement of technologies to develop sugar production, improving its quality. Many technical and economic indices of sugar factories depend on the quality of raw, mainly sugar beet. Quality of sugar beet, in turn, is connected with the observance of agricultural activities: planting dates, processing, composition of fertilizers and introducing them into the soil, as well as the quality of its seeds and other factors having a significant effect on the change in the biological composition of sugar beet and its content of no sugars. Rationality installation to accelerate the development of sugar industry has an objective economic justification, related primarily to food security over the sugar and the presence of all the necessary factors for the implementation of this national objective[15].

Solving this problem will create the necessary reproduction circuit, which will involve not only the production of business structure of the sugar industry, but also related sectors of the economy, and the results will be transformed into the production of finished products of domestic producers. Currently, there are objective possibilities of realization of priority directions in the development of sugar industry, due to the presence - established technologies for industrial production of beet created varieties and hybrids of sugar beet, which are able to harvest at the level of EU sugar - advanced with the necessary logistical support[16].

State support in conjunction with the capabilities of large sugar companies with the financial and material resources, effective government policy to protect the domestic sugar market will in the medium term to achieve success and realize the target

installation[17]. At the same time, the practical implementation of the installation for the implementation of the national development strategy of sugar beet production with reliance on its own raw materials, will be constrained by some limitations, one of them should include:

- accession of Republic of Kazakhstan to the Customs Union with Russia and Belarus may increase pressure on the domestic production of multinational companies;

- low profitability and the volatility of financial results from operations of various industrial structures will result in a high degree of investment risk and deter investment in the development of the industry;

- high depreciation and technological backwardness of the main production units, predetermining scale investments in upgrading technical base.

However, it should be noted that the implementation of targets for the development of sugar industry carries certain risks, due to the low competitiveness of its economic relations with other sectors of the economy. The state has a large arsenal of tools that can be in the medium term to ensure a significant increase competitiveness of the sugar industry due to financial, informational, organizational support, quality control procedures, and administration, as well as measures of customs and tariff regulation. These government measures should be involved at an early stage, to restore previously achieved milestones in order to give a positive impulse to the development and improve the financial stability of enterprises, establishment of investment attractiveness of sugar beet production.

From the various options of protective measures sugar market during the time of market reforms in the long term should remain those that contribute to the formation of prices in the domestic sugar market, providing increased profitability and competitiveness of production.

The effectiveness of state regulation should be determined the ability to create the necessary capacity of the domestic market for the available space in order to expand the production of sugar from domestic raw materials and fill the market space. This approach will enable to develop dynamically such important aspects as sugar beet seed, which is currently in a state of crisis and is having difficulty selling its products.

The implementation of these state measures will reduce the uncertainty in the implementation of the product being produced and reduce the degree of investment and economic risks.

To improve the efficiency of government support measures need to be implemented in the selection of the market, i.e. primarily to support those beet farms



and sugar mills, which in recent years have shown themselves in production and business activities effective owners. Accordingly, the implementation of targets for the development of sugar industry must solve the following problems:

- to ensure the growth of sugar beet production in the main beet-growing zones;
- conduct technical modernization of sugar factories with the introduction of resource-saving technologies and the installation of modern types of equipment;
- to construct sugar factories circulating water systems with full closed-loop and biological treatment facilities for wastewater treatment;
- create logistical, financial and institutional prerequisites for increasing the efficiency of sugar beet production and increasing the volume of production of beet sugar;
- form the necessary infrastructure and implement organizational and technical measures aimed at diversifying production, which will generate additional profitability of production;
- introduce an effective mechanism to protect the domestic sugar market;
- an effective system of information support of economic and technological decision -making in the various parts of sugar production;
- provide personnel for expanded reproduction of the sugar industry, capable of working in a modern technical and informational environment.

Our research found that under favorable conditions on cultivated areas (40-60 thousand) can get up to 1240-2100 tons of sugar beet from which to develop a 132-240 thousand tons of sugar. This output will provide 60-95% capacity utilization of existing sugar mills in processing season (105-110 days). Thus due to the domestic needs of the population beet sugar 24-40%. Given the above defined balance of production and use of sugar beet in the future (Table 1).

Other sources of replenishment of the deficit is the import of finished sugar (Russia, Belarus) and the use of sugar crops (sorghum, maize) for sugar syrup. Production of Glucose-fruit syrup (GFS) half the price of sugar. This will significantly reduce the import of sugar from abroad. If the annual production of 60.0 thousand tons of GFC, the need for pure sugar can be reduced by a third. For this amount of syrup in the Republic of Kazakhstan should cultivate 1200 tons of maize and sorghum and build appropriate plants.

To improve the efficiency of sugar beet production is necessary to introduce innovative technologies. As the experience of Italy, France, China and other countries, this can be achieved primarily through a partnership of private business and the state. Over the years our business

development market lost scientific and technical content, and only about 1,5 % of private business can be attributed to the innovative. Kazakhstan is extremely insufficient budget funding for science (in developed countries for research and development is spent around 3% of GDP in Russia - 1.7% and 0.18 % in Kazakhstan), the prestige of the scientist in society has fallen to an unacceptably low level. It should be noted that the real market for intellectual services in Kazakhstan is not yet established, although industrial research institutes have significant developments that can be successfully used in industry for the manufacture of innovative products. Given the diversity of innovation activity with limited resources, government agencies must select the priority areas of scientific research in beet production sphere and in the sphere of industrial technology processing. This is characteristic of many industrialized countries, where financial resources are concentrated on the most promising scientific developments.

Table 1 - Balance of production, use of sugar beet and level of sugar provision of the Republic of Kazakhstan.

Index	1990 fact	2008- 2012 on the average	Up to 2015	Up to 2020
Sown area, thousand ha	43,6	16,2	40	60
Yield, t/ha	239	220	310	350
Sugar beet production, thousand tons	1148,7	297,5	1240	2100
Exports, thousand tons	-	4,0	-	-
Imports, thousand tons	5,6	6,5		
Total used, thousand tons	1134,3	295,0	1240	2100
including:				
feed, thousand tons	15,0	11,0	14,0	24,0
seeds, thousand tons	-	-	4,0	6,0
losses, thousand tons	60,0	21,5	50,0	60,0
processed, thousand tons	1059,3	262,5	1172	2010
Obtained sugar from own production, thousand tons				
	124,0	30,5	132	240
Consumption of sugar, thousand tons	564,5	490,9	550	600,0
Self-sufficiency, %	22	7,5	24	40

For creation of the most significant scientific developments State may establish a state order by financing from the national budget. These developments should be focused primarily on the development of new technologies in the industry. For example, one of the weaknesses of Kazakhstan sugar factories in the competition is the almost complete lack of production sectors, technically and technologically associated with the sugar industry. Thus, the sugar industry in Western Europe and in the U.S. offers more than 150 different products of sugar

processing raw. Furthermore, foreign competitors produce more than 30 varieties of commercial sugar, which differ from each other different contents of poly – and monosaccharaides enriched presence or coloring additives. Considerable importance is attached to the package here, which significantly increases the attractiveness of consumer goods. Thereby, the external market sugary products initially becomes more attractive to consumers.

### Conclusion

1. When determining the prospects for agricultural production is important in our view to consider objectively established indicators of its effectiveness in accordance with the requirements of a market economy. In a planned economy, efficiency was measured in the key performance indicators of resources - land, labor, real material. Financial performance is established. Evaluation of the company carried out in view of the plan for the production and sales. With the development of market relations, the various forms of ownership and management of increasing importance in assessing the performance of producers acquire indicators reflecting its competitiveness and ultimate economic results.
2. Formation of market relations in the sugar beet industry requires a system of market organization, its rational structuring of the purpose of establishing the priority problems and solutions. World experience shows that the process of formation of market relations cannot take place in a short time, and so it takes quite a long period. Consequently, the formation of the sugar market developed as a complete system of economic relations requires not only a certain time, but also the availability of material resources, the establishment of appropriate legal, regulatory, economic and market regulators. Beet-sugar industry plays an important role in ensuring of the Food of the population, as they produced the final product - sugar - people need in pure form and is mandatory technology component for production of other food industries. Considering the high multiplier effect on the using the sugar, as well as territorial unevenness of its production in the country, the development of sugar industry should be under the supervision of the state, which is represented by the executive is obliged to monitor his condition to a hard slot to take preventive measures to reduce the negative effects factors affecting it. In our opinion, the efficiency is achieved when resources are allocated so as to allow to obtain the greatest possible profit in all branches of sugar production.
3. Based on the synthesis of foreign practice of the production of sugar, it is concluded that, despite the benefits of global trade, Kazakhstan - optionally be taken into account long-term effect on investment from its own beet-sugar production and as a priority of agricultural policies to determine the course of self-reliance and independence of the raw by direct state regulation and support. Agriculture - notoriously unprofitable industry, very dependent on climatic conditions. Therefore, developed countries such as USA, Japan, France and others, trying every way to support their producers subsidies, grants, concessional loans. Moreover, the state acts as the main customer products. Our country due to lack of funds cannot it afford. Although at higher international prices for sugar to stabilize prices in the domestic market could support government subsidies sugar factories, as well as buy their products through state reserves for subsequent sale to vulnerable groups.
4. In order to address the shortcomings and restore sugar production, it is necessary to strengthen the role of state regulation by increasing subsidies, as well as the use of vertical and horizontal corporation, i.e. associations of sugar beet production and processing in a single economic complex, based on the best global practices of sugar beet production.
5. The main causes of decline in sugar production are defined by factors such as lack of incentive manufacturers beet sugar factories in increasing the production of raw materials, inadequate production and economic relations between the primary producers and processors. The experience of European countries in which the association of sugar producers are responsible for the distribution of their allocated quotas among sugar beet farms, thus this leads to the rational using of land and resources, and ultimately gives a guaranteed sale of harvest. In turn, the plants receive high quality raw, which gives a qualitative reworking sugar, bestselling population and thus plants provide themselves a sufficient level of profitability.
6. Achievement of high results possible with the strictest observance of all agricultural activities, requires first of all the relevant logistical and financial support. Critical to the implementation of these measures has major business beet crop rotations, make effective use of high-performance vehicles, intensive technologies and on this basis to achieve high yields.
7. The state's role in the development of innovative processes in the sugar beet industry is that it is through a system of laws to protect domestic

innovative developments the inland and foreign market of intellectual products and oversees the financial regulation of the economic areas where the market cannot fulfill its self-regulatory function. In particular this applies to large-scale and expensive projects associated with high risks. It is necessary to support not only research and development scientists, but also to use advanced foreign technology, engineering developments in the field of food engineering, which do not fall under the restrictions of international organizations for the protection of intellectual property and do not require large financial outlays.

8. Manage sugar industry almost dispersed on individual companies and only reflects their corporate interests, not of a systemic nature, not embedded in public policy and does not reflect its objectives - development of sugar industry in Kazakhstan. Construction of the structure and organization of cooperation between the main actors of sugar beet production in Kazakhstan should be based on the using of foreign experience of the EU countries that have achieved high performance in national sugar production.

#### **Corresponding Author:**

Dr. Kaldiyarov D.A.

Zhetysu State University named after I.Zhansugurov  
Zhansugurov Street, 187A, Taldykorgan, 040000,  
Republic of Kazakhstan

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