Ways to intensify innovation and import substitution in macrologistic systems of the Republic of Kazakhstan in the context of international integration

The article discusses the current priorities for the development of macrologistic systems of the Republic of Kazakhstan that contribute to the development of innovation and import substitution in industry and the business sector. Particular attention is paid to the organizational and economic foundations of building macrologistic systems and their types, taking into account the vertical and horizontal integration of material and intangible flows, economic integration of the economies of near and far abroad countries. In the process of conducting the research, the current areas of production within the framework of the operation of vertical macrologistic systems in the Republic of Kazakhstan, taking into account the factors of international integration, are identified, the problems of macro-logistic that impede innovative development and import substitution in economic sectors are formulated. In order to solve logistics problems at the macro level, economic policy directions are proposed in two directions — with the participation of Kazakhstani enterprises and enterprises of near and far abroad, with the participation of the state. Practical recommendations have been developed for each direction, which determine the increasing role of macro-logistic systems in the innovative development of the economy, and the implementation of import-substitution business projects. The studies are applied in nature and can be widely used in practice in the framework of improving the industrial and innovative development policy of Kazakhstan, integrating the country into the global economy. The main research methods used were a systematic approach, analysis and synthesis, observation, and hypotheses.

Keywords: globalization, international integration, economic union, customs union, innovation, import substitution, logistics, macro-logistic systems, vertically integrated, production potential.

At the present stage of globalization, the participation of national macro-logical systems in world processes is intensifying. The density of economic relations within the transboundary territories in the context of international integration is increasing. With the changing political structure of the world, the role of national macro-logical unions is growing, which have an impact on global economic development trends.

The current economic situation is characterized by the uncertainty of the prospects for world economic growth amid the displacement of the center of world economic activity from West to East, from America and Europe to Asia, from developed countries to developing ones. Accordingly, the influence of large developing economies and macro-logistic systems with their participation is growing dynamically. [1].

The Republic of Kazakhstan in the context of world globalization at the present stage seeks to create appropriate conditions for the protection of national economic interests, taking into account the growing trends of competition and scientific and technological progress. One of the significant tools to increase the innovativeness and competitiveness of the national economy, to create high-tech import-substituting industries, is the integration of the country's macro-logical system into the international macro-logical systems of other countries.

The deepening of market relations, the integration of the macro-logical system of the Republic of Kazakhstan into the international economic space, contributed to the development of the country's economy, the expansion of sales markets, attracting new investments to the economy, primarily in the manufacturing sector.

Despite the positive trends in Kazakhstan's participation in the international division of labor, there remains a wide range of unresolved problems, such as the low innovative activity of industrial enterprises, the low level of cooperation and integration of industrial enterprises focused on the production of high value-added products. The latter requires consideration and search for reserves to increase the role of the country's macro-logical systems in the industrial and innovative development of Kazakhstan, taking into account all potential factors of international integration [2, 3].

The earlier scientific studies that we carried out made it possible to formulate a refined definition of the macrologistic system [4]. In our opinion, in accordance with Figure 1, the macro-logistical system of the Republic of Kazakhstan is the multiplicative mechanisms of interaction between enterprises of all types of industry, territorial (regional) production associations at the national level, as well as national economic systems at the global (international) level, oriented towards solving economic problems and achieving economic benefits for all participants in the supply chain of material and intangible flows.
The formation, functioning and development of macro-logical systems of the Republic of Kazakhstan presupposes the existence of the necessary relevant organizational and economic foundations, which, in turn, in our opinion, can be systematized in two directions (levels):

- global level;
- national level.

Of particular relevance, in the context of international integration, is the country's macro-logistical system, which is being built at the global level.

The global level of construction, functioning and development of macro-logical systems takes into account aspects of the logistical integration of the economy into global market relations.

The organizational foundations of the construction, functioning and development of macro-logical systems at the global level can be determined in such areas as: membership of the Republic of Kazakhstan in the CIS; membership of the Republic of Kazakhstan in the EAEU; membership of the Republic of Kazakhstan in the Customs Union «Kazakhstan – Russia – Belarus»; implementation of global infrastructure development programs.

Research and analysis of the economic foundations of macro-logical systems at the global levels suggests the presence of trends in international trade operations, migration processes.

In the complex, in our opinion, the foundations for the construction and development of macro-logical systems of the Republic of Kazakhstan in the context of international integration can be represented in accordance with Figure 2.

The principles of industrial and innovative development within the framework of the functioning of macro-logical systems, taking into account the organizational foundations, are based on the integration relations of production and business entities located in the territories of various states. The main objectives of integration within the framework of industrial and innovative development are:

- ensuring the progressive development of scientific and technological progress in the countries of the economic union;
- intensification of the creation of new high value-added industries in the sphere of small, medium and large business;
- intensification of the implementation of research and development work;
- a significant increase in the competitiveness of countries participating in the economic union in relation to third countries [5].
The basic principles of integration aimed at innovative development in the functioning of the macro-logical system are presented in Figure 3.

For the intensification of innovation and import substitution, in the Republic of Kazakhstan, vertical macro-logical systems are of particular importance. Vertical macro-logical systems cover the flow of resources between enterprises whose activities are technologically interconnected [6]. Each enterprise acts as a link in one technological chain. The model of the vertical macro-logical system is shown in Figure 4.
In the vertical macro-logical system, there are long-term, stable ties between enterprises, which are formed for the joint manufacture of any finished commodity products, ready for consumption, form economic cooperation [7].

Vertical macro-logistic systems in the Republic of Kazakhstan have not yet received widespread and wide distribution, but they are gradually starting to gain momentum.

At the present stage, vertical macro-logical systems in the Republic of Kazakhstan, taking into account the factors of international integration, are being developed in the areas presented in accordance with the Table 1.

**Table 1**

<table>
<thead>
<tr>
<th>The name of the development of macrological systems</th>
<th>Name of production</th>
<th>Brief description of products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmaceuticals</td>
<td>Production and pharmaceutical company Eleas LLP</td>
<td>Full-fledged contract manufacturing of injectable powder antibiotics (cephalosporins and carbapenems), in vials</td>
</tr>
<tr>
<td>Electronics</td>
<td>KazTechInnovations LLP</td>
<td>He specializes in contract manufacturing of high-tech radio electronics for all sectors of the economy and industry</td>
</tr>
<tr>
<td>Engineering</td>
<td>LLP «Contract manufacturing» «Delta-IT»</td>
<td>He specializes in contract manufacturing of high-tech radio electronics for all sectors of the economy and industry</td>
</tr>
<tr>
<td>Engineering</td>
<td>JSC Factory «LG Electronics»</td>
<td>Production of household appliances under the LG brand</td>
</tr>
<tr>
<td>Engineering</td>
<td>JSC «ASIA — AUTO»</td>
<td>Multi-brand production of cars</td>
</tr>
</tbody>
</table>
In the field of pharmaceuticals, the vertical macro-logistic system is represented by the Eleas Production and Pharmaceutical Company LLP.

The production of Eleas is focused on the production of injectable drugs that meet modern requirements for the production of sterile medicines — Quality Standard ST RK 1617–006 «Good Manufacturing Practice» [8].

The company is open to consider various mutually beneficial cooperation options:
- to locate the local production of solid dosage forms;
- on joint promotion of products (goods) to the markets of interest;
- participation of Kazakhstani enterprises in existing and future investment projects in Kazakhstan and the EAEU countries [8].

In the field of electronics, the vertical macro-logistic system is represented by the following enterprises: KazTechInnovations LLP; LLP «Contract manufacturing» Delta-IT «; JSC Factory «LG Electronics».

KazTechInnovations LLP specializes in the contract manufacturing of high-tech radio electronics for all sectors of the economy and industry, where the quality and reliability of the products are of particular importance:
- industrial electronics;
- transport;
- telecommunications and wireless communications;
- electronics security systems and communications instrumentation for the needs of states;
- military electronic industry [9].

KazTechInnovations LLP provides integrated contract manufacturing services: from selection and delivery of components, development and testing of prototypes to automated production [9].

In order to create competitive products in the international high-tech and innovation market, in 2007 in the Republic of Kazakhstan, the enterprise Delta-IT Contract Manufacturing LLP was established [10].

The company has been a member of the Free Economic Zone Alatau-IT city Information Technology Park since 2007.

Today, the localization of production is more than 60 %, which classifies manufactured products, according to the Decree of the Government of the Republic of Kazakhstan, to the category of goods produced on the territory of the Republic of Kazakhstan [10].

In 1998, the LG Electronics factory was built in Almaty, which today is the first and only enterprise in Central Asia to produce world-class electronics. The latest innovative developments and technologies available today in Korea are used to manufacture the latest innovative LG OLED TVs with 4K, Ultra HD resolution within Kazakhstan, an assortment of Smart TV features on the new webOS 2.0 platform [11].

In 2002, the ASIA AVTO Joint-Stock Company was established in the Republic of Kazakhstan [12].

The parent enterprise is an automobile assembly plant located in the capital of East Kazakhstan, Ust-Kamenogorsk. The company has branches in all major cities of Kazakhstan.

The goal of the company «ASIA AUTO» is the creation in the Republic of the automotive industry, allowing to produce competitive cars, and meeting the needs of the population of Kazakhstan and some of the neighboring countries.

The strategy of «ASIA AUTO» involves the phased formation of the automotive cluster — the creation of an automobile assembly plant; opening of paint and welding production in it, development of a sales and service network. The establishment of the plant is designed to stimulate the formation in the Republic of related industries of automotive components, components and spare parts, such as batteries, tires, glass, electrical equipment, hardware [12].

On September 27, 2007, the opening ceremony of the Daewoo bus production plant at the production facilities of SemAZ LLP in Semey, East Kazakhstan, Republic of Kazakhstan, took place [13].

The creation of the Daewoo Bus Kazakhstan automobile plant fully meets the goals set by the President of the country of the Kazakhstan-2030 Development Strategy. This is the formation in the country of high-
tech industries not in the raw materials sector of the economy, oriented to export. The main goal that the bus plant will contribute to is the development of the automotive industry of Kazakhstan.

This production was the first in Kazakhstan automobile assembly plant of a full cycle, including not only the assembly of components and assemblies from imported car kits, but also assembly-welding, and painting of bodies. Investments in the enterprise amounted to 5 million dollars. The production capacity of the plant is 1,200 buses per year.

The founders of Daewoo Bus Kazakhstan LLP on an equal footing are the Kazakhstan company Semipalatinsk Automobile Assembly Plant LLP and the Korean company Daewoo Bus Global Corporation [13].

In 2011, a plant for the production of high-speed passenger cars «Tulpar-Talgo» was built in Astana, which has no analogues in the CIS. The construction of the plant was carried out with the joint cooperation of Kazakhstan Temir Zholy Joint-Stock Company and the Spanish company Patentes Talgo. The project was implemented as part of the state program of forced innovation and industrial development, with the support of the President of the Republic of Kazakhstan Nursultan Nazarbayev [14].

The demonstration of examples of vertical macro-logistic systems in the Republic of Kazakhstan shows that this area is a priority and important for industrial and innovative development. Meanwhile, it should be noted that the dynamics of creating vertical macro-logistical systems, including those oriented not only at innovations, but also at import substitution, is relatively passive. Over the years of the development of a market economy and the implementation of four programs of industrial and innovative development, no more than 7 small and medium high-tech vertically integrated industries have been created. This fact indicates the presence of system-forming organizational and economic problems in the development of vertical macro-logistical systems.

The problems of creating vertical macro-logistical systems oriented to the innovative development of production and import substitution are presented in accordance with the Figure 5.

![Problems of creating vertical macro-logistical systems](image)

**Note.** Figure designed by the author.

Figure 5. Problems of creating vertical macro-logistic systems in the Republic of Kazakhstan, focused on the innovative development of production and import substitution

In our opinion, the following guidelines should be used for the development of macro-logistical systems focused on innovation and the policy of import substitution:

- progressive development of production integration processes;
- achieving a high level of balance of material flows in the context of export-import operations;
- increase of material flows with a high level of added value and their orientation towards industrial and innovative development within the framework of all potential organizational foundations (CIS, EAEU, Kazakhstan-Russia-Belarus Customs Union);
- the formation in the system of economic cooperation of countries of vertical production relations based on a cluster approach.
Directions for the development of macro-logical systems focused on innovative activity and the policy of import substitution can be carried out in two directions:

- with the participation of Kazakhstani enterprises and enterprises of near and far abroad;
- with the participation of the state.

For the purposes of industrial and innovative development, enterprises should pay special attention to improving the efficiency of using production and economic potential, while mechanisms should be developed to improve the resource potential of business entities, which would cover:

- intellectual capital, know-how, including the management system in accordance with advanced international standards;
- production capital, including advanced technologies;
- highly qualified and competitive personnel.

Kazakhstani enterprises, within the framework of integration cooperation, should be interested in mobilizing capital on the world market and strive to create a favorable investment climate to attract foreign investors, while the latter have the opportunity to decide on investment in a particular country. In this case, the main emphasis should be on entrepreneurial capital, and not financial. To attract entrepreneurial capital, not only the current conditions of its application are important, but also the strategic goals pursued by enterprises investing capital: conquering new markets, reducing production costs.

Practical recommendations to enhance the role of macro-logical systems in the industrial and innovative development of Kazakhstan, in our opinion, can be based on the following areas:

- practical recommendations for enterprises within the cooperative chains (joint ventures, concerns, trusts, holdings, syndicates);
- practical recommendations for government management services in charge of economic and industrial production (regional departments of the economy and budget planning, regional departments of business and industry);
- practical recommendations for enterprises and organizations participating in the logistics service infrastructure.

The main practical recommendations in these areas are presented in the Table 2.

**Table 2**

Practical recommendations for increasing the role of macro-logical systems in the industrial and innovative development of Kazakhstan

<table>
<thead>
<tr>
<th>Potential participants in macrologistic systems</th>
<th>Recommendations for enhancing the role of macro-logical systems in industrial and innovative development</th>
</tr>
</thead>
</table>
| Enterprises included in integrated production (joint ventures, concerns, trusts, holdings, syndicates) | Creation of joint specialized enterprises  
The formation and development of cooperative relationships  
Formation of integrated innovative industries, technological clusters with a full production cycle  
Implementation of the principles of innovation management  
Improving the marketing of business entities and implementing the principles of logistics marketing  
Implementation of modern mechanisms for controlling logistics processes |
| Public administration services in charge of economics and industrial production | Development of joint regional and regional medium-term, long-term and strategic plans for the development of the economy and industry of the border territories of the Commonwealth countries  
Development of joint medium-term, long-term and strategic plans for the development of the state logistics infrastructure (roads, air traffic, railway communication)  
Holding international development conferences  
Economics and industry border areas of Russia and the Republic of Kazakhstan  
Holding joint exhibitions «Industry — Business — Partnership» of the Republic of Kazakhstan and the countries of near and far abroad |
Enterprises and organizations — participants of the logistics service infrastructure

Improving investment mechanisms for creating a logistics service infrastructure

Improving the range of professional services in the field of international logistics

Development and provision of consulting, training services in the field of international logistics

Note. Compiled by the author.

Along with the foregoing, practical recommendations can also be developed to customs authorities on increasing the role of macro-logistic systems in the industrial and innovative development of Kazakhstan. The development of practical recommendations to the customs authorities should be based on the following principles:

– Customs authorities are an instrument for the implementation of both domestic and foreign public policies;
– Customs authorities should work closely with existing logistics centers and logistics companies;
– Customs authorities should directly and indirectly contribute to improving the effectiveness of participants in foreign economic activity.

In the context of the expansion of foreign economic activity of enterprises of the Republic of Kazakhstan, countries participating in vertical macro-logical systems, the interaction of customs authorities should be carried out taking into account the fact that they are positioned at external borders with third countries. At the same time, customs posts can be endowed with new functions that contribute to increasing the efficiency of the economies of integration countries. The existing and proposed functions of the customs authorities are presented in the Table 3.

### Table 3

<table>
<thead>
<tr>
<th>Existing functions of the customs authorities</th>
<th>Proposed Additional Customs Functions</th>
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<tr>
<td>– the implementation of customs clearance and customs control, the creation of conditions conducive to the acceleration of trade through the customs border;</td>
<td>– expanding the areas of customs statistics, including the conduct of price statistics and statistics on certain technical parameters of goods and cargo being transported;</td>
</tr>
<tr>
<td>– collection of customs duties, taxes, customs duties, taking measures for their enforcement;</td>
<td>– providing comprehensive statistical information (development of mechanisms for providing information) to logistics centers and logistics companies;</td>
</tr>
<tr>
<td>– ensuring compliance with the procedure for moving goods and vehicles across the customs border;</td>
<td>– Development of joint customs administration programs with logistics centers and companies.</td>
</tr>
<tr>
<td>– ensuring compliance with established prohibitions and restrictions on goods transported across the customs border;</td>
<td></td>
</tr>
<tr>
<td>– ensuring the protection of intellectual property rights;</td>
<td></td>
</tr>
<tr>
<td>– the fight against smuggling and other crimes, administrative offenses in the field of customs;</td>
<td></td>
</tr>
<tr>
<td>– exercising control over currency operations of residents and non-residents related to the movement of goods and vehicles across the customs border;</td>
<td></td>
</tr>
<tr>
<td>– maintaining customs statistics on foreign trade;</td>
<td></td>
</tr>
<tr>
<td>– implementation of cooperation with customs and other competent authorities of foreign states, international organizations involved in customs matters;</td>
<td></td>
</tr>
<tr>
<td>– providing information and advice in the field of customs;</td>
<td></td>
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<tr>
<td>– carrying out research work in the field of customs.</td>
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</table>

Note. Compiled by the author.
Together, the proposed ways of intensifying innovation and import substitution in the macro-logistical systems of the Republic of Kazakhstan in the context of international integration will allow: creating joint ventures; to expand technology; implement broad areas of scientific and technical cooperation between enterprises; to develop international trade as the most traditional direction of international economic activity; to develop international financial exchanges (international stock markets, international borrowing, as well as electronic currency exchange systems).

With regard to innovative development and import substitution, the implementation of the proposed measures will allow:

- create new innovative industries within the framework of the participants in the foreign economic activity of Kazakhstan, enterprises of the countries of near and far abroad;
- increase the efficiency and economic feasibility of trade between Kazakhstan and the countries of near and far abroad, aimed at creating added value;
- increase the efficiency of cooperation of enterprises of Kazakhstan with high-tech and innovation-oriented foreign enterprises.

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E.K. Kunyazov

Халыкарлық интеграция жәдіжіна
Қазақстан Республикасының макрологистикалық жұйелеріндегі
импортты алмайтыру және инновацияны күшейту қолдары

Макалаға өніркәсіп пен кесіпкерлік секторларға инновациялар мән импорт алмайтыруда дамытуға ықпал ететін Қазақстан Республикасының макрологистикалық жұйелерінің дамытуын өз екі басымдықтарына қарадықызған. Материалдық және материалдық емес ағындардың тік және қолданаң интеграциясы, тауы және алыс шетел елдері экономикалықтың экономикалық интеграциясы өсіріп отырып, макрологистикалық жұйелер кұрылыссының ұйымдастырушылық және экономикалық қағаздарға, олардың турліріне ерекше нәрсә аударылды. Зерттеу жұртқу процесиңде халыкарлық интеграция факторларын әсерке алы алынды, Қазақстан Республикасында тік макрологистикалық жұйелеріңіз істейін қазіргідегі қолданыстақы байғаттар, өндірістер әкелінген, экономика салаларында инновациялық даму мен импортты алмайтыруға қарай қолданыстағы макрологистика
миссий экспортации қуыс ырымдайт. Макрокденгейде логистика миссий экспортациин шешу максатына екі өкі байынка — Казахстандық қысқындар мен тауа және алыс шетел қысқындардың қатысымын, мемлекеттің қатысымы экономикалық саясатын багыттары ысындылы. Өлір байы шөн экономикалық инновациялық дамуында жүйелердің ролі арттырады, імпорт әлмистару байында бизнесті-жоғарларды іске асуы бойынша алыс алына байлықтың практикалық ысындылы эзірленді. Журилгізелген зерттеулер қолдаңы ынақта өзі және Казахстаны дамытуын иңдерлық-инновациялық саясатын жетілдіру, елдің жаңылық экономикаға іріу шөнберінде практика қенінен қарай ылды. Зерттеудің негізі өстіретен ретінде — жырлі тәсіл, тағау және синтез, балалар, гипотезалар қою қолданылы.

Кіті сөзбен: жаңаның, халықарадын интеграция, экономикалық адам, көп адам, инновациялық, імпортты алымдастыру, логистика, макроиндустриялық жүйелер, тік интеграцияланған өндірістер, оңдірістік әлеует.

E.K. Кузыкоз
Пути интенсификации инноваций и импортозамещения в макрологистических системах Республики Казахстан в условиях международной интеграции

В статье рассмотрены актуальные приоритеты развития макрологистических систем Республики Казахстан, способствующих развитию инноваций и импортозамещению в промышленности и предпринимательском секторе. Особое внимание акцентировано на организационные и экономические подходы ассортиментмакрологистических систем и их влияние на уровень вертикальной и горизонтальной интеграции материальных и нематериальных потоков, экономической интеграции экономик стран ближнего и дальнего зарубежья. В процессе проведения исследования, обозначены действующие на правления производства в рамках функционирования вертикальных макрологистических систем в Республике Казахстан с учетом факторов международной интеграции, сформулированы проблемы макрологистики, препятствующие инновационному развитию и импортозамещению в отраслях экономики. В целях решения проблемы логистики на макроруровне предложены направления экономической политики по двум направлениям — с участием казахстанских предприятий и предприятий ближнего и дальнего зарубежья, с участием государства. Для каждого направления разработаны практические рекомендации, предполагающие повышение роли макрологистических систем в инновационном развитии экономики, реализации бизнес-проектов по импортозамещению. Проведенные исследования носят прикладной характер и могут способствовать широкому распространению на практике в рамках совершенствования индустриально-инновационной политики развития Казахстана, интеграции страны в глобальную экономику. В качестве основных методов исследования применялись системный подход, анализ и синтез, наблюдение, постановка гипотез.

Ключевые слова: глобализация, международная интеграция, экономический союз, таможенный союз, инновации, импортозамещение, логистика, макрологистические системы, вертикально-интегрированные производства, производственный потенциал.

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