transport and logistics centre; logistics infrastructure;
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# STUDY OF THE STATE OF LOGISTICS IN KAZAKHSTAN: PROSPECTS FOR DEVELOPMENT AND DEPLOYMENT OF TRANSPORT AND LOGISTICS CENTRES

**Summary.** The creation and development of Kazakhstan as a trade, logistics and business hub of the region is on the agenda of the Government of Kazakhstan. To achieve this, central and local governments, private businesses invest in new infrastructure projects in logistics.

The article investigates the problems of modern logistics infrastructure formation in the territory of the Republic of Kazakhstan. The survey results show that the attractiveness of Kazakhstan as a transport and logistics hub will depend on the state of logistics infrastructure, service quality, and technology used. Further development will largely depend on its ability to diversify and create logistics facilities with high added value. Priorities and the need for multi-level transport logistic centres have been defined; their development in domestic, export and transit directions has been described, both at the national and international levels and at the enterprise level as well.

# ИССЛЕДОВАНИЕ СОСТОЯНИЯ ЛОГИСТИКИ КАЗАХСТАНА: ПЕРСПЕКТИВЫ РАЗВИТИЯ И РАЗМЕЩЕНИЯ ТРАНСПОРТНО-ЛОГИСТИЧЕСКИХ ЦЕНТРОВ

**Аннотация.** Вопрос создания и становления Казахстана как торгового, логистического и делового хаба региона стоит на повестке дня Правительства Казахстана. Для достижения этой цели центральные и местные органы власти, частный бизнес инвестирует новые инфраструктурные проекты по логистике.

В статье исследуются проблемы формирования современной логистической инфраструктуры на территории Республики Казахстан. Результаты опроса показывают, что привлекательность Казахстана, как транспортно-логистического хаба, будет напрямую зависеть от состояния логистической инфраструктуры, качества сервиса, используемой технологии. Дальнейшее развитие будет в значительной степени зависеть от способности диверсифицировать и создать объекты логистики с высокой добавленной стоимостью. Определены приоритеты и необходимость создания многоуровневых транспортно-логистических центров, их

развития во внутреннем, экспортном и транзитном направлениях, как в международном, так и национальном масштабах и на уровне предприятия.

## 1. INTRODUCTION

Kazakhstan is located at the intersection of major transport routes and is among several major players in retail markets – China, Russia, Eastern and Western Europe – and, therefore, appears as a promising course for the implementation of the new Silk Road through the development and deployment of modern logistics centres (LC) in Kazakhstan and neighbouring countries. On the territory of the republic are five international railway transit routes, six international transport corridors and several major pipelines. Creation and development of international logistics centres of the Eurasian Economic Community (EurAsEC) to the year 2020, in prospect, is an additional opportunity for logistics services development in Kazakhstan [1].

Hence, high actuality of the tasks intended for development of transport and logistics infrastructure is ensured. In particular, the formation of a system of regional logistics centres is an essential and key component of improving the efficiency of a functioning transport complex in the Republic of Kazakhstan.

The prospects of creating logistics centres in Kazakhstan at different levels (international, regional, inter-regional and local), which collectively forms an integrated transport and logistics system is getting a special actuality in the framework of forming transport and logistics cluster in Kazakhstan.

The aim of the study is to investigate the main factors affecting the transportation direction (export, transit and domestic) of goods in Kazakhstan and identify promising areas of development and deployment of multi-level transport and logistics centres.

## 2. STATE OF DEVELOPMENT OF THE TRANSPORT SYSTEM AND LOGISTICS IN KAZAKHSTAN

### 2.1. Indicators of cargo

The transport sector is one of the basic industries of Kazakhstan and is about 8% of GDP. The employment rate is 7.0% of the total employed population of the country; fixed assets of transport industry is 14% of the fixed assets of the country. The turnover of the transport sector is increasing rapidly due to dynamic passenger and freight traffic.

The transport system in Kazakhstan has an important role due to factors such as a large area of the country (2,724,900 sq. km), which stretches from west to east to about 3 thousand km, and from north to south to almost 2 thousand km; low population density - 5.5 persons per 1 sq. km; considerable distant freight transportation; the nature of the products that require long distances movements [coal, iron ore, petroleum products, metal industry and agriculture products (grain, wool, meat)]; transport and geographical position of the country, through which significant flows of transit goods are transported.

In recent years, the volume of freight traffic, as well as investment in transport and warehouse were significantly increased. In 2013, 3.508 billion tons of cargo was transported by all types of transport, which was 60.3% more than in 2008 (Tab. 1). Levels of investments were considerably increased in the transport sector. In 2013, 9.5 billion USD were invested. Compared to 2008, the increase was 52.4%. Cargo turnover in 2013 increased by 134% compared to the level of 2008 and amounted 495.4 billion ton-kilometers. Foreign trade turnover also grew by 22.4%, but its share of GDP has been steadily declining, indicating the temporary deterioration of trade relations due to the crisis. In 2013, exports and imports in the total trade turnover were respectively 84.7 and 48.8 billion USD.

Table 1

Main indicators of transport development in Kazakhstan [2]

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | Growth rate 2013/2008, in % |
|---|---|---|---|---|---|---|---|
| GDP, million USD | 130038,0 | 115306,0 | 146906,0 | 188050,0 | 203521,0 | 231875,1 | 178,3 |
| Foreign trade turnover, total, million USD | 109 072,5 | 71 604,4 | 91 397,5 | 121 241,7 | 132 807,2 | 133 506,0 | 122,4 |
| % to GDP | 83,8 | 62,1 | 62,2 | 64,5 | 65,2 | 57,5 | 68,6 |
| Exports | 71 183,5 | 43 195,8 | 60 270,8 | 84 335,9 | 86 448,8 | 84 700,4 | 118,9 |
| Imports | 37 889,0 | 28 408,6 | 31 126,7 | 36 905,8 | 46 358,4 | 48 805,6 | 128,8 |
| Transportation of cargo by mode of transport, million tons | 2188,7 | 2103,3 | 2439,4 | 2974,9 | 3231,8 | 3508,0 | 160,3 |
| Turnover, billion tkm | 369,7 | 337,0 | 385,3 | 448,8 | 478,0 | 495,4 | 134,0 |
| Investments in fixed assets on transportation and warehousing, million USD | 6270,6 | 6560,8 | 4984,8 | 6113,2 | 6966,3 | 9555,4 | 152,4 |
| Income from transport and auxiliary transport activities of enterprises, million USD | 11170,3 | 9481,4 | 11871,0 | 13253,0 | 14655,6 | 16517,7 | 147,9 |
| Cargo intensity, tkm / $ 1 | 2,8 | 2,9 | 2,6 | 2,4 | 2,4 | 2,1 | 75,0 |
| The average distance of transportation, km | 168,9 | 160,2 | 157,9 | 150,9 | 147,9 | 141,2 | 83,5 |

More than half of the cargo transported in the country's public transport accounted for road transport that is a priority for the delivery of goods to the regions of the republic.

In 2013, in the structure of cargo transportation by transport type, share of road transport was 85.0%; rail transport accounted for 8.4%.

The share of rail transport in the total cargo turnover exceeds 50%; the share of auto transport is more than 27%; there is underdevelopment of cargo by air transport (less than 1%); the share of water transport is less than 0.2%.

There is an increase in traffic volume and cargo turnover by about 6-9% per year; cargo growth is observed in all types of transport, except for water and air; there is redistribution in cargo transportation.

The increase in cargo volume at the permanent length of roads leads to increased utilization of existing transport routes and logistics infrastructure in Kazakhstan.

In recent years, freight traffic has increased significantly, but the demand for services of logistics operators practically did not grow. The companies are still engaged in transportation and storage of goods independently and are in no hurry to outsource logistics.

This is due to the fact that some companies offer expensive rates, and others do not have sufficient capacity to maintain the quality of services [3]. Therefore, companies focused on customer needs and at the same time adhering to the optimal pricing feel more confident.

In the total volume of freight traffic in 2013, 57.2% was within the country (48.9% was interregional communication), 21.1% for export, 3.5% for import and 17.1% was for transit traffic.

Over the last 5 years (2009-2013), income from carriage in Kazakhstan has been constantly growing. For 2013, total revenue exceeded 8.78 billion USD.

Sixty-two percent of all income from carriage falls under the international destinations, which indicates the upgrade and improvement of the quality of transport and logistics infrastructure serving international cargo transportation, especially transit.

In this regard, 'breakthrough' projects are needed for maximum use of the transit potential of the country. Reconstructed new transport corridor 'Western Europe - Western China' meets these requirements; its total length is 8445 km, of which the Kazakhstan section is 2787 km, 2233 km are in the Russian Federation, and 3425 km in China. The project cost of the Kazakhstan section is 5.65 billion USD. The implementation of the project will allow the redirection of part of the movement of Chinese goods from sea transport to road (45 days by sea versus 11 days by motor transport through Kazakhstan).

Among all types of transport, rail transport along the Euro-Asian routes has a great potential to become more competitive in terms of travel time and fares. The transport operators must speed up delivery time and improve the quality of service to meet the demand, while governments and investors need to modernize the infrastructure and harmonize national legislation.

### 2.2. State and prospects of logistics development in Kazakhstan

The logistics development in Kazakhstan affects, first of all, the high dynamics of economic development, which requires an appropriate evolution of the transport system that can effectively serve the logistics needs of the economy. GDP growth on average for 2006-2007 was 10.2%, in 2008-2009 was 2.3%, and in 2010-2014 was 6.0% [2].

The country has the potential to promote transit traffic through its territory. According to Kazakhstani expert Aikyn Urkimbayev [4], 10-12% of GDP in member countries of the Eurasian Economic Community is formed at the expense of logistics. In the EU the figure is 20-25%. The country has high transit potential. A well-developed network of transit routes was created through Kazakhstan.

One of the tools of logistics development in the Republic of Kazakhstan is the development of logistics infrastructure (logistics centres, logistics parks, logistics areas, distribution centres, warehouses etc.). According to the Transport strategy of the Republic of Kazakhstan until 2015 [5], and the State program for the development and integration of transport infrastructure of the Republic of Kazakhstan until 2020 [6], the country plans to establish transport and logistics centres (TLC) in all regions of Kazakhstan with the expansion in the transport and logistics services.

Based on the analysis and projected annual growth rate of production in Kazakhstan (up to 8%) and retail trade turnover (9-15% per year), as well as taking into account the increase in the purchasing power of the population, in our view, we can assume that in the coming years the growth rate of logistics market will not fall. According to estimates, its annual volume currently in Kazakhstan is about 20-24 billion USD.

Over the past five years, the number of logistics and transport forwarding companies increased by 76% and reached 92. Almost 60% of them are located in Almaty. Eighty percent of transit goods due to lack of storage infrastructure are processed in Almaty, and then sent back to the regions.

The reason for the poor development of logistics services is that they are not quite yet in demand in the regional markets of Kazakhstan.

The main problems of logistics:

1) The relatively low efficiency of logistics.

According to the World Bank's report in 2014, Kazakhstan took 88th place on the logistics performance index (LPI) out of 160 countries surveyed, down 2 points compared with 2012 (86th place) and 26 points compared to 2010 (62nd place) [7].

Largely low rating of our country according to 2014 is due to the underdevelopment of transport and logistics infrastructure (121st), shortcomings in the work of the customs authorities (121st place

versus 73th place in 2012), a low level of development of transport and logistics services (132 place), the complexity of the international supply of goods organization (100th place versus 90th place in 2012), and a catastrophic shortage of graduates in logistics and supply chain management (83 place).

The average logistics performance index in Kazakhstan in points in 2000-2004 was 2.66; in 2005-2009 was 2.6; in 2010-2014 was 2.38 [7]. That shows their deterioration.

The low rating demands the implementation of a set of measures to improve these indicators.

2) The absence of a concept of transport and logistics centre (TLC) creation and development in Kazakhstan [8]. Taking into account the chaotic and unsystematic creation of logistic facilities that do not consider the strategic objectives of the country's economic development, we believe that there is a need for a modern concept, which takes into account the development and deployment of transport and logistics centres, ensuring its integration into the international transport and logistics system.

3) A limiting factor of logistics development in Kazakhstan is the absence of a legislative framework and a special state program on the development of the TLC network.

The situation in warehousing is worse. According to poll results, 60% of companies in Kazakhstan use 'C' class buildings, which imply their low adaptability to the storage of goods [9].

However, the features of the the territorial development of industry, trade and external relations explain the unevenness in equipping regional transport and storage infrastructure. The high concentration of warehouse business is located in Almaty, Astana and Aktobe.

If the supply of modern warehouses in European cities is from 500 to 1200 sq.m per 1000 inhabitants, then in the most prosperous region – Almaty and the Almaty region – it is about 200 sq.m [10]. This data shows the lag in the provision of modern warehouses of the most logistically developed cities of Kazakhstan compared to some European capitals.

For the analyzed period (2008-2013) in the Republic of Kazakhstan, retail trade turnover grew by more than 3 times. Over the past 3 years, growth rate accelerated and accounted for more than 13.5% per year.

In 2013, 738 warehouses were registered in Kazakhstan. Six hundred and seven of them (82%) were small, 126 (17%) were average, 5 (1%) were large enterprises.

The big problem is the absence of a national standard for warehouse complexes and logistics centres.

Professional warehouses occupy only 2% of the market (Class A), 13% are converted from hangars, shelters, and other industrial buildings – semi-industrial warehouses (Class B) and 85% of warehouses that do not meet modern requirements (Classes C and D).

According to experts, the main barriers hindering the development of the warehouse property market are indistinct classification of storage facilities, absence of relevant recognized quality standards, and absence of a civilized land market and a deficit of areas with an appropriate infrastructure.

### 2.3. Trends in development and deployment of logistics centres

The first initiative to develop TLC in Europe appeared within 60-70 years of the last century in France, Italy and Spain [11; 12]. But intensive development began later in Germany when systematic cooperation of seaports and railways was adjusted. Since 1992 the creation of a national network of TLC has started on the base of 44 intermodal terminals of BAHNTRANS that was owned by Deutsche Bahn [13].

Between 1980 and 2000, many governments in Western Europe were actively involved in the construction of logistics facilities: transportation centres, cargo villages, intermodal hubs (activity centres), logistics platforms, logistics hubs, intermodal terminals and others [14]. They have seen this as an opportunity to influence the development of the regional economy and resolve traffic problems associated with the dominance of automobile transport in the freight transportation. The intervention of these countries' governments took the form of programs, the result of which was the implementation of TLC network.

Logistics centres (LC) are especially more effective when they function in the sea and river ports, major railway and network-wide transport hubs [15].

A new trend in the development of logistics outsourcing in the EU was the creation of a pan-European system of product distribution, providing multiple bearing European LCs that interact with regional logistics transport and distribution centres, namely, logistics on a European scale [16]. This solution was designed to accelerate the progress of commodity material flows, to ensure the continuity of the commodity circulation process, and to reduce inventory and costs.

There is not a unified model of territory service based on the creation of a support network of LC since the conditions of each specific landfill is significantly different. The service of a particular LC is determined by the economic benefit to consumers of logistics services, as well as social and environmental benefits for the residents of the region [17].

Along with the formation of LC in the form of distribution centres, large companies that produce consumer goods in Western Europe and the United States establish international logistics centres. They accumulated cargo handling, distribution and delivery of goods to many countries [18], directed the development of intermodal transport corridors for inland terminals with state participation (Sweden), mixed operation of government and business (Scotland), and ran the private sector with minimal government participation (United States).

Location of logistics centres is a key element in improving the efficiency of urban freight transport. Public authorities should take into account the importance in terms of economic, social and environmental impacts, before announcing territory as LC [19].

The globalization of markets requires a new approach to the development of transport and logistics infrastructure – making the transition from single to the network. In this way, the two-tier system of TLC of DB Shenker Company allowed Germany to become Europe's largest distribution centre of freight traffic. Support hubs are located in key European transport corridors, covering the freight traffic of the North (Malmo), South and South-East (Salzburg), the West and South-West (Paris), wherein the central hub in Friedewald integrates the entire system into a single unit. The second level of a network consists of many smaller terminals of DB Shenker and their partners throughout Europe.

Network solutions of the Canadian Pacific include seaports associated with roads and railways (east and west coast of North America) and 145 intermodal freight terminals, transhipment points, and freight yards [20]. The network of transport and logistics centres of the Canadian Pacific is linked to the centralized control system and single technological process and provides connectivity of territories of the US and Canada, as well as access to key maritime trade routes of Southeast Asia and Europe direction.

Logistics costs in Kazakhstan are very high and vastly exceed the level of developed countries. So, today in Kazakhstan the share of logistics costs is up to 25% of the cost of the final product. While the world average figure stands at 11%, China 14%, the EU 10-13%, the USA and Canada 10%, and Japan 14% of GDP [21].

TLC development in the CIS countries, primarily in Russia, Ukraine, Belarus and Kazakhstan, takes place on the same principles as in rest of the world but has its own characteristics [1, 22-24]. The territory of the usual TLC is 10-100 hectares but can range up to 150 hectares, depending on the volume of services. In many countries, including Kazakhstan, there are no regulations on the establishment of TLC.

In terms of the most important global trends for Kazakhstan, the following has been highlighted:

1) development of a multi-level and effectively managed network of internal and external transport and logistics centres as a cargo management system on a vast geographical area (Germany) [17];
2) development of the concept of ‘dry ports’ near major producers and consumers (USA, Mexico) [12; 18; 25];
3) creation of transnational multimodal integrators on the basis of the largest companies that perform the task of accelerated development of the logistics part on the vast geographical area (Germany, Canada) [20];
4) introduction of the principles of supply chain management and contract logistics;
5) improving the efficiency of customs procedures (Singapore). For example, the establishment of an efficient customs has become one of the key factors in the development of Singapore as a global trading hub;
6) raising the level of containerization;

7) introduction of innovative and information technologies;
8) creation of attractive conditions of service of transport companies;
9) tendency to improve the quality of logistics services along with growing competition;
10) development of networks of airports and high-speed railway lines for passengers.

Kazakhstan's TLC is relatively small in capacity but appears as a key segment of the transportation sector of Kazakhstan, which has a great development potential.

However, today in Kazakhstan there is a significant need in modern multifunctional and multimodal TLC that are based on the regional characteristics of cargo distribution (export, import, transit) on aggregate destinations in the Republic of Kazakhstan.

## 3. RESEARCH METHODOLOGY

Methods of study include analysis of the existing literature and expert survey of specialists in companies engaged in the provision of transport and logistics services, government agencies and consumers of logistics services (large retail chains).

The experts were highly skilled specialists of large transport and logistics and trading companies with experience of 10 years or more. Number of experts consisted of 11 people.

Form of expert survey: a mixed form of survey was used – questionnaires and interviews. The survey was carried out individually, in writing (questionnaire) and orally (an interview). The evaluation was conducted by the preferences and ranking. The consistency of experts' opinions and reliability of expert evaluations were conducted by the coefficient of concordance. Data was collected by direct visits to companies in the spring of 2014 in Almaty and Astana, where almost 80% of companies are located.

The main purpose of the expert survey is to identify the existing problems in the transport of goods and elaboration of recommendations for the development and deployment of transport and logistics centres in Kazakhstan.

**Purpose of the study.** To investigate the main factors affecting the transportation direction (export, transit and domestic) of goods in Kazakhstan and identify promising areas of development and deployment of multi-level transport and logistics centres.

The following tasks were set for the solution of this goal: evaluation of a problem hindering the potential of domestic, export and transit transportations, evaluation of the conceptual directions of development of TLC.

**The following characteristics were used for evaluation.** Evaluation of problems hindering the potential of domestic, export and transit transportations (22 questions) is presented in appendix A. The purpose of the research is to evaluate the problems and potential of domestic, export and transit transportations for identifying directions of the LC's development.

Evaluation was carried out in areas of transportation for the next group of indicators: TT - transit; ET - export; IP - internal. Each parameter of group of expert indicators, derived from interactive quizzes, were graded on a scale of 1 to 4 points. In our example, impact on the strategic development of TLC: 1 – No effect; 2 – Positive effect; 3 – Moderate negative impact; 4 – Significant negative impact.

Concepts of development of TLC network were determined by taking into account the specificities and characteristics of goods, characteristic of the given region, and the advantages and prospects of development of international transport corridors that pass through Kazakhstan.

The evaluation was conducted in three main priority areas of the development of Kazakhstan's TLC: transit, internal and export.

## 4. RESULTS

The considered problems have a significant negative impact on the TLC development (37 answers are ‘yes’, of 66 possible or 56.0%).

From Tab. 1 it is clear that a significant negative impact on the TLC development is because of transit transportations (13 answers out of 22 possible), export transportations (15 answers out of 22 possible). To a lesser extent are domestic transportations (13 answers out of 26 possible).

The problems and their major reasons are discussed below in details.

**The following major problems and reasons are revealed.**

Infrastructure imperfection, poor material and technical base (68%); poor coordination, regulation and planning cooperation of market participants (54.5%); public policies (tariff, pricing, investment (45.4%); imperfection of legal and regulatory documents and the mismatch of national legislation with international standards (36.3%); lack of funding (31.8%); low quality of services (22.7%); low competence of experts (18.2%); imperfection of the market (13.6%).

Based on these problems and the experts' answers, we have grouped the main directions for the development of future projects for placement and development of transport and logistics centres.

**Conceptual directions of a TLC network creation and development**

In every region of Kazakhstan, specific material flows are associated with a major agricultural and industrial production, the conditions of import and export, and transit of material resources and finished goods through the territory of the region.

Specialization in the development of TLC in the region is advisable to carry out with consideration of specifics and properties of goods (freight) distinctive for the countries of the region.

Existing terminal warehouses in the country, at best, may be specialized, mainly for processing, storage and distribution of cotton, agricultural, food, grain, construction and chemical cargo, as well as consumer and household goods. However, they do not meet the modern requirements due to technical capabilities and equipment, and they are also not systematically located, without mutually binding to each other, sometimes without connection to the networks of transport and information communications; they also have different capacities and are used only for temporary storage. Often, due to a lack of TLC, the same set of goods is placed in small quantities in different warehouses. In this regard, it is impossible to ensure the integrity of the delivery supply chain with the provision of a complex of transport, technology, customs and related services in one place, the implementation of which could have been made on the territory of the TLC.

The logistics system in Kazakhstan should include the TLC network. TLC will be formed according to an industry orientation. However, in our opinion, it is necessary to develop wholesale-logistical (trade) and multifunctional TLC.

The matter is a strategy for the development of regional multi-level TLS (transportation logistics system) infrastructure, of which the basic element is the TLC network for different purposes. In our view, the multi-level system of the TLC should include the following items described in Tab. 2.

Based on the strategy objectives, analysis of the problems, opportunities and threats facing the sector of logistics and trade in Kazakhstan, we have identified five key areas of logistics development in Kazakhstan:

*1) Development and creation of public TLC, both domestically and in major border transport hubs*

The main ones are located in the major network-wide nodes (border crossing point ‘Dostyk’ bordering China) and sea ports (the port of Aktau on the Caspian Sea) to serve exports and as transit for public use.

The purpose of TLC is the strategic positioning of Kazakhstan as a powerful transport and logistics hub in Eurasia. For the growth of exports, it is necessary to develop the Aktau port, TLC in Dostyk, Khorgos and Almaty (Fig. 1).

Using the European experience, the supporting part of the system will be based on a network of border TLC, of which the most important will be the Eastern Gate - Khorgos and Dostyk, the Western Gate - the port of Aktau, and TLCs which are located in places of origin of export and transit traffic intersections.

The main axis of the transit system, Lianyungang/Chongqing/Urumqi - Dostyk/Altynkol (Khorgos) and further to Russia/Belarus/Ukraine/Baltic States/Europe, will work on the attraction of cargo flows through Kazakhstan, mostly from China and South-East Asia to Europe and Russia (Fig. 1).

Table 2

Multi-level logistic centres

| Multi-level logistic centres | Examples | Criteria |
|---|---|---|
| Supporting TLC is a point of formation and dissolution of freight trains (mainly transit flows, reconsignment points) | TLC Astana, Aktobe | Defining criteria<br>• availability of sufficient track growth and reserves of throughput on connecting station;<br>• maximum closeness to major transportation hub and to the centre of mass emergence and/or repayment of cargo flows;<br>• availability of free capacity of utilities and transport communications;<br>• maximum closeness to the main roads;<br>• maximum closeness to the metropolitan area;<br>• the existence of reserves of railway infrastructure capacity on the approach to the connecting station. |
| Continental supporting TLC is located on the borders of transport law transition or within the continent at a distance of over 1,000 km from seaports | Khorgos, Dostyk (RK) | |
| Marine supporting TLC (dry port) is located in the rear areas of seaports within 100 km | Dry Port (Aktau, RK) | |
| Regional TLC is a point of formation and dissolution of freight trains (predominantly domestic and export / import goods) | Ust-Kamenogorsk (RK)<br>Shymkent (RK)<br>Karaganda (RK) | |
| Satellite TLC is a terminal (terminal group) associated with TLC, with single processing technology, and which is essentially a remote object of TLC | Pavlodar (RK)<br>Tobol (RK)<br>Petropavlovsk (RK) | |
| Specialized TLC is a terminal (terminal group) for a specific type of goods, where processing in the territory of TLC for any reason is not possible or feasible | Grain terminal in the Iranian-Turkmen border, and seaport Aktau | |
| Industrial and Logistics Park (the centre) is the regional transport and logistics hub with a wide range of functional areas, technologically limited in comparison with the satellites TLC | Industrial and logistics park ‘DAMU-Almaty’ | |
| Logistics Centre is a terminal or group of terminals for transport and logistics services to regional companies | High Tech Logistics (Almaty, RK) | |

All these TLC should be integrated into regional logistical transport-distribution systems based on the formation of a unified system of organizational, economic, information and legal support system of control freight and goods movement.

Given the huge geographical size of the country, the scale of industrial production, and an extensive network of railways, existence of a system of medium-capacity roads, auto and rail terminals with an area from 8-10 ha to 15-20 ha will be needed. Their formation can take place on the basis of existing transport companies and warehouses, freight yards and railway sort facilities in the areas of cities with a strong potential for freight traffic in major industrial areas, such as Karaganda, Ust-Kamenogorsk, Semey, Taraz etc.

The analysis shows that the largest cargo import and export of goods originates and is redeemed in Almaty, Astana, Aktobe, Pavlodar, Shymkent, Aktau and Atyrau [8]. These cities need to create territorial public TLC.

Cargo flow for export formed in these cities will be consolidated with the transit traffic of the regional TLC.

Integration into the global transport and logistics network is implemented through the development of a TLC network on the territory of the Republic of Kazakhstan, cooperation with external TLC and EurAsEC network (Fig. 1).

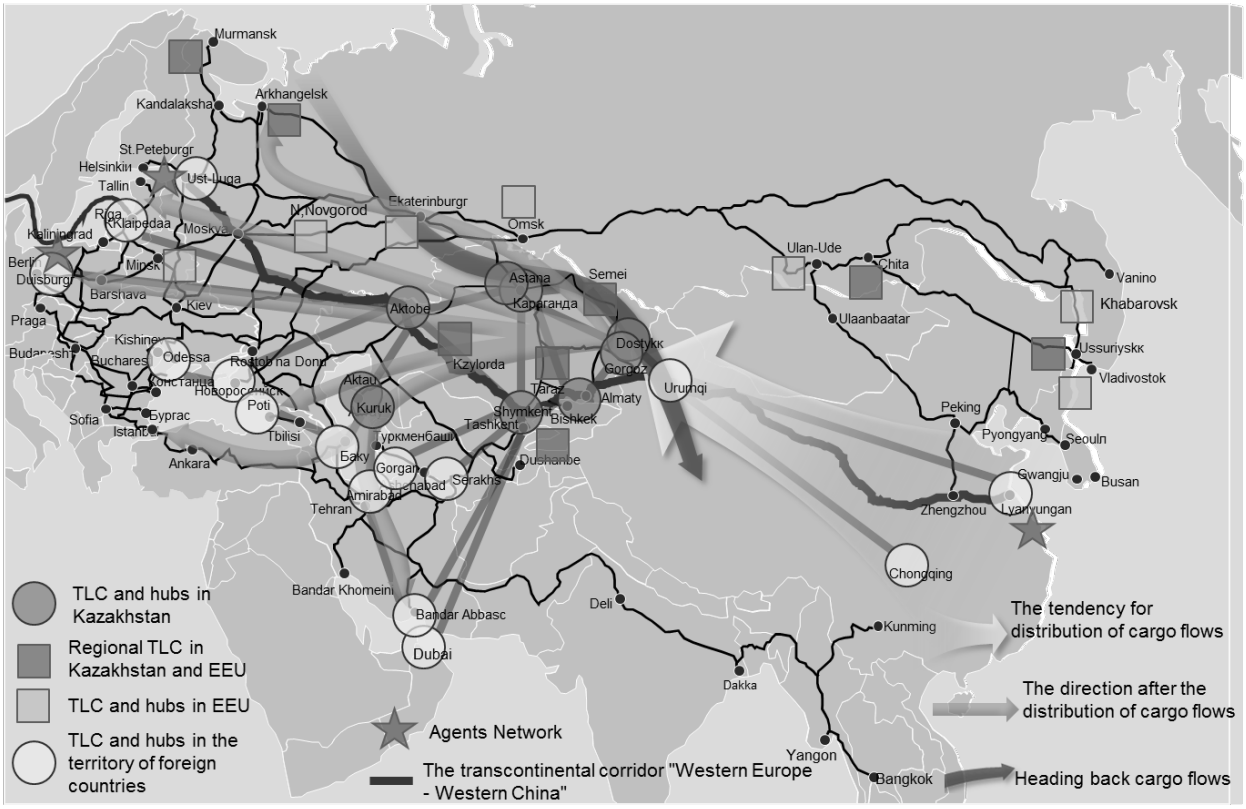


Fig. 1. Strategic positioning of Kazakhstan as a transport and logistics hub in Eurasia
Рис. 1. Стратегическое позиционирование Казахстана как транспортно-логистического хаба на Евразийском пространстве

*2) Creation of logistics centres for internal trade serving, namely, the creation of wholesale and distribution logistics centres*

Wholesale and logistics centres should be formed on a territorial basis with the opportunity of specialization in the types of goods and freight traffic. This requires the creation of two types of wholesale structures – the republican and the regional. Republican wholesale and logistics centres with a central office and warehouse in Almaty and branches in the regions provide a supply of goods for the needs of consumers in all regions. Such wholesale and logistics centres have great prospects in wholesale trade in building materials, wood products and chemicals, clothing, footwear, knitwear, electrical appliances, household goods and food products. Regional centres of wholesale trade ensure the delivery of goods for the regional organizations.

Choosing a location of wholesale and logistics centres is determined by their proximity to major road and rail routes, on the main directions of goods flow and freight traffic, following on the territory of the republic. They are located in Almaty, Astana, Shymkent, Karaganda, Aktobe, Ust-Kamenogorsk and Aktau.

We conducted a study to determine the provisioning of storage facilities for the major cities of Kazakhstan [8].

In early 2013, the cities' need in warehouses was 3.92 million square meters; according to our forecasts, by 2020 it will be 4.3 million square meters, by 2025 - 4.6 million square meters, and by 2030 - 4.58 million square meters. The largest increase is expected in Astana and Almaty [8].

*3) Development of logistics infrastructure based on customs warehouses, in particular, on existing cargo terminals in Kazakhstan of the JSC 'Kedentransservice'*

Formation and creation of LC on the basis of customs' temporary storage warehouses of 'Kedentransservice' (Joint Stock Company with 50% of the shares from the state and 50% of the shares from private firms that specialize in providing complex transportation and logistics services) enable the company to improve the coordination and level of services as a freight forwarder, customs broker and owner of a temporary storage warehouse and customs warehouse, to offer the market a range of services for the effective maintenance of trade turnover (exports, imports) and transit traffic. The range of services must include the operations carried out as a joint-stock company 'Kedentransservice' directly and by partner companies, including those abroad.

Participation of JSC 'Kedentransservice' in TLS is due to the following factors: the company's specialists are located in all regions and areas of customs clearance of Kazakhstan; JSC 'Kedentransservice' operates 16 warehouses of temporary storage.

It is necessary to conduct work on the creation of a TLC network on the basis of the company. Its main purpose is to create a workable system of multi-level TLC to provide a full range of services in the field of customs, freight forwarding, warehousing and information logistics; using the principles of 'just in time' and 'door to door'.

*4) Creation and development of trade and logistics centres in foreign countries*

Given that Kazakhstan is one of the six world grain exporters, the creation of grain terminals in TLC ports with Kazakhstan's participation is justified. Integration of all internal and TLC ports into a single system will be a key tool for the development of TLS of international level.

In 2015, the joint efforts of Kazakhstan, Russia and Belarus created a united transport and logistics company, which allows reducing the time of transporting goods in the East-West direction.

The presence in Chinese centres such as Urumqi, Chongqing and Lianyungang will provide an opportunity to influence the formation of the cargo base and engage in direct dialogue with shippers, promoting the advantages of overland routes through Kazakhstan.

The key project in this direction is the construction of own terminal infrastructure in the port of Lianyungang to consolidate freight flows in the direction to/from South-East Asia, which is one of the most promising directions of trade development in Kazakhstan.

*5) Development of logistics infrastructure in the enterprise*

It includes, firstly, the management of warehouse and packaging farms, transport and handling equipment; second, development of information systems for material and financial flows management for the management and inventory optimization etc.

Currently, the world over, there is a tendency of passing many transport and logistics functions up for outsourcing to logistics enterprises, which reduces logistics costs. Domestic companies are no exception and should follow the same trend.

Furthermore, in our opinion, creation of the law on the TLC activity in Kazakhstan will allow us to determine the extent of state involvement in logistics projects; to work out the structure of TLC, the mechanisms for inclusion of various logistics companies in the TLC, distribution of orders among the participants of the TLC, the procedure of forming the supreme management of the TLC etc. The law should reflect assigning specific features of any project to TLC, the tools of state-public partnership in the project.

## 5. CONCLUSION

Modern Kazakhstan logistics system is in the process of formation.

The level of development of transport and logistics complex in the region as a whole is assessed as insufficient. For the effective functioning of the TLS, it is necessary to create the infrastructural basis of modern transport and logistics system in Kazakhstan, TLC network construction.

The results of the study showed that only geographical location is not enough for the country's integration into the global LS. In order for transit cargo flows to shift to the transportation system of Kazakhstan, firstly, it is necessary to significantly raise the overall level of development of

the domestic TLS and its infrastructure, modernize and significantly expand bandwidth capabilities of highways in Kazakhstan through the development of the TLC, and ensure the transparency of transport tariffs and the mechanism of their control and regulation.

At the same time, attention should be paid, not to the indicators of the increase of physical elements of transport infrastructure, as it is often asserted in substantiating of the decision to invest in transport infrastructure, but primarily to the improvement and efficiency of existing networks, improving the management of transport infrastructure, as well as motivating regional authorities to increase the intensity of its use.

Depending on the characteristics and volumes of freight traffic, the degree of influence on the economy of the country and the region, as well as other factors in the regions of Kazakhstan, it is necessary to create terminal and logistics complexes for various purposes in the territory and regions with a large export and transit potential.

Based on the analysis of the problems of logistics infrastructure development, the necessity of creating a multi-level network of transport and logistics infrastructure in Kazakhstan was substantiated.

Construction of the LC should focus on the processing of transit cargo, as well as export-import freight traffic.

Formation of transport infrastructure network is intended to provide favourable conditions for high regional development and stimulate economic growth.

Thus, it offers the conceptual approach to the logistics infrastructure development as a multi-level regional logistics system in Kazakhstan, taking into account the specifics of the regions' economic development.

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Appendix A
Experts' evaluation of problems hindering the implementation
of export and transit transportation potential

| Problems | The direction of transportation | Assessing the impact on the strategic development objectives of the TLS | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| 1) High wear of mainline railway network (MRN) and rolling-stock | TT* | | | | + |
| | ET** | | | | + |
| | IT*** | | | + | |
| 2) The lack of rolling-stock | TT | | | | + |
| | ET | | | | + |
| | IT | | | | + |
| 3) Industry monopoly | TT | | | | + |
| | ET | | | | + |
| | IT | | | | + |
| 4) Lack of 1st and 2nd class roads | TT | | | | + |
| | ET | | | + | |
| | IT | | | + | |
| 5) Companies of the road transport industry do not have sufficient financial resources | TT | | | | + |
| | ET | | | | + |
| | IT | | | | + |
| 6) No competitive offers for servicing in air transit | TT | | | | + |
| | ET | + | | | |
| | IT | + | | | |
| 7) Insufficient capacity of the port and service infrastructure to handle container cargo reduces the competitiveness of Aktau | TT | | | + | |
| | ET | | | | + |
| | IT | + | | | |
| 8) Lack of merchant fleet | TT | | | + | |
| | ET | | | | + |
| | IT | + | | | |
| 9) Lack of capacity utilization of the Atyrau port in the river and maritime transport | TT | | | + | |
| | ET | | | | + |
| | IT | + | | | |
| 10) The absence of the Maritime Administration in Kazakhstan holds back the development of the national maritime | TT | | | + | |
| | ET | | | | + |
| | IT | + | | | |
| 11) Lack of impact of the RK on the distribution of transit traffic reduce volumes of potential transit through the territory of the country | TT | | | | + |
| | ET | | | + | |
| | IT | + | | | |
| 12) The duration and instability of carriage terms due to the weak coordination of participants reduce the attractiveness of routes passing through the Republic of Kazakhstan | TT | | | | + |
| | ET | | | | + |
| | IT | | | + | |
| 13) "Bottlenecks" of transport network limit the capacity of corridors | TT | | | | + |
| | ET | | | | + |
| | IT | | | + | |
| 14) Imbalance of cargo flows within the main transport corridors | TT | | | | + |
| | ET | | | | + |
| | IT | + | | | |

| | | | | | |
|---|---|---|---|---|---|
| 15) Lack of an integrated route offers from one hand complicates the process of interaction with the carriers for potential shippers | TT | | | | + |
| | ET | + | | | |
| | IT | + | | | |
| 16) Lack of practical cooperation between the participant countries of the international transport corridors | TT | | | | + |
| | ET | | | + | |
| | IT | + | | | |
| 17) The low level of containerization limits the ability to increase exports and transit | TT | | | | + |
| | ET | | | | + |
| | IT | + | | | |
| 18) Inadequate development of integrated logistics services (contract logistics market) reduces the effectiveness of both shippers and transport companies of Kazakhstan | TT | | | + | |
| | ET | | | | + |
| | IT | | | | + |
| 19) The duration of customs clearance reduces the attractiveness of Kazakhstan for transit and the competitiveness of domestic producers | TT | | | | + |
| | ET | | | | + |
| | IT | + | | | |
| 20) Differentiated tariff policy reduces the attractiveness of the individual types of transport and leads to the socio-economic inefficiency | TT | | | | + |
| | ET | | | | + |
| | IT | | | | + |
| 21) The absence of a law on the transit of goods through the territory of the Republic of Kazakhstan prevents an increase in the volume of transit | TT | | | | + |
| | ET | + | | | |
| | IT | + | | | |
| 22) Lack of legislative framework among international consultative and advisory secretariat for the transit routes | TT | | | | + |
| | ET | | | + | |
| | IT | + | | | |

Note:
**1. The direction of transportation: *** TT - transit; **ET - export; ***IT - internal;
**2. Impact on the strategic objectives of the TLS:** 1 - No effect; 2 - The positive impact;
3 - Moderate negative impact; 4 - Significant negative impact