

## Improving of Methodological Approach to the Formation and Management of Transport and Logistics Cluster

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**Abstract:** Formation of the national logistics system and its subsequent entry into the international macrologistical system for any country is paramount. This way of integration into the world community is the most effective. Formation of the national logistics system will bring a new level of infrastructure development and strengthen internal interregional ties that serve as a catalyst for further economic growth. The solution to this problem, including in Kazakhstan, is seen as a strategic way to improve the country's competitiveness, expanding the market for new innovative technologies in the field of transport and logistics cluster. Due to the fact that transportation and logistics services, which are formed during the movement of goods, can be optimized and lead to more efficient management of transport and logistics industry, there is a need for a thorough and methodological development of transport and logistics cluster formation theory at a qualitatively new level.

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### 1. Introduction

Researches of many scientists show that a feature of the modern economy is formation of strong innovation clusters. In many countries today use the cluster approach to understanding macro-and meso-economic processes. Solving problems of innovative development can be reflected in the different areas of regional economy. An example is the new, but today a rapidly developing industry – transportation and logistics services. The most important factor of economic growth becomes formation of integrated logistics systems, covering both individual business sectors, and entire regions and countries.

Experience in use of logistic systems (LS) in the developed capitalist countries shows that transport costs reduce by 7 - 20% , costs of loading - unloading and storage of material resources and finished products are reduced by 15 - 30%, total logistics costs are reduced by for 12 - 35%, turnover of material resources accelerates by 20 - 40%, material resources and finished products are reduced by 50 - 200% (Kearney, 1994; Bowerssox, 1996).

Kazakhstan's prior task for the immediate future is to establish itself as a trade, logistics and business hub in the region. Geopolitical and geo-economic potential of Kazakhstan is largely implemented through the provision of transport services. Over the last ten years transit has become an essential component of the service exports. Export of transport services is a real resource that Kazakhstan has to achieve economic growth. In total exports

transport services occupy 55% or \$ 4.8 billion, accounting for 2.8% of GDP. Volume of trade between the neighboring regions of Kazakhstan will increase by 2020 compared to 2010 by 1.5 times and reach 1 trillion dollars. It creates the potential of transit through Kazakhstan (Transport Strategy of the Republic of Kazakhstan till 2015, 2006). China's need for current transport through Kazakhstan ranges from 1 million to 1.5 million containers, including export and transit.

In this regard, Kazakhstan's participation in the international transport system formation is of particular relevance due to its geopolitical position, economic potential and historical traditions. Over the last several years, Kazakhstan has demonstrated high rates of economic and social development among post-Soviet countries.

Modern decor in the area of transport of goods leads us to the following conclusions. First, increased trade and freight put burden on the existing infrastructure and as the economy grows, it will continue as long as the infrastructure capacity will be sufficient for its service. Second, higher levels of integration into the international community determine interest in improving competitiveness and transition to innovative resource-saving and environmentally sound technologies, in particular logistics.

Processes of Kazakhstan integration into the world economic community also occur on certain trends that can be defined as follows. On the one

hand, trans-nationalization of the world market, increase of export and transit capacity, increased competition from alternative routes, increasing intermodality, complexity of supply chains, economic diversification. On the other hand, Kazakhstan consists of uneven and significantly differentiated in socio-economic development regions: priority development of trade, expansion of volume, geography and transport modes, in particular, greatly expanded Kazakhstan market of container traffic, increase of mutual trade between the CIS and far abroad; increase bandwidth problems in transport corridors, low competitiveness of regions in their development.

In this regard, the experience of developed countries shows that one of the most effective ways to create competitive products or services is regional clusters. For Kazakhstan, which currently has the untapped potential of transport services, the greatest interest are transport and logistics clusters (TLC) and their coordination structures - transport and logistics centers (TLC).

Transport logistics cluster creation using the principles of logistics will improve the level of transport services, significantly reduce time interval between the purchase of raw materials and semi-finished goods and delivery of finished products to the consumer. It will help reduce the amount of expenses for the maintenance of stocks and transportation of products, which is especially important for Kazakhstan with significant territory. Today the share of transportation expenses in the cost of goods and services in Kazakhstan reaches only domestically 8-11 % versus 0.8-2.0 % in developed countries.

Main objectives of Kazakhstan cluster initiative are creating conditions to maximize the competitive advantage in the development of Kazakhstan's non-oil sector of economy through the involvement of private business entities into industry, maximum approximation of cost share in the cost of transportation of goods and services to the level of costs in developed countries - 4-4.5% (Diversification of Kazakhstan's economy through the development of clusters in the non-oil sectors of economy).

When considering the cluster formation process in Kazakhstan there are very serious obstacles lead to the apparent lack of an entrepreneurial culture and functional incompleteness of structures that could enter into various self-organizing structures, absence of necessary coordination of activities of central executive bodies, executive bodies of Kazakhstan's regions and local authorities and business associations for

implementing cluster policies; limited set of instruments of cluster projects financial support.

This does not provide the main thing: so far not solved the main problem - there is no permanent and effective cooperation between public authorities and major market participants of transport and logistics services (TLS).

The absence of such interaction leads to a lack of objective information about the changes in the market of TLS, which entails the adoption often not competent and timely management decisions for transportation and logistics services.

For obtaining the maximum socio-economic effect from the TLC functioning in certain regions or territories is necessary to develop the cluster model of transport and logistics system, organizational and economic mechanism of TLC management, which would include the following elements: development of the structure, functions, composition and governance of the TLC, development of optimal management organizational structure, development of criteria, principles and methods of TLC control.

In this regard, development of theoretical aspects of TLC management and control methods for their implementation is relevant and timely.

Despite a number of studies on this issue in today's economy there is a need to clarify the concepts of transport and logistics cluster, determine its distinctive features, species, and identify patterns and principles of transport and logistics cluster organization formation.

#### **Aim of the research**

Aim of the research is development of scientific-methodological basis of model for creation and management of macrologistical systems (MLS) management in Kazakhstan in the form of transport and logistics clusters that enhance the quality of service, optimization of material flows between suppliers and consumers of goods and increase the economy competitiveness.

#### **Following tasks were defined to achieve the aim:**

- Organize and clarify the conceptual apparatus of transport and logistics cluster;
- Identify factors and assumptions affecting the formation of regional transport and logistics clusters;
- Discover the essence and content of main components of transport and logistics clusters;
- Develop a model for transport and logistics cluster, as an object of integrated transport and logistics system and mechanisms of its implementation;
- Develop a methodology to assess the transport and logistical capacity, aimed at identifying of regions potential;
- Develop organizational and economic mechanism of transport and logistics cluster.

**Subject of research** is a scientific-methodological and practical aspect of transport and logistics clusters development in Kazakhstan.

**Objective of research** is the process of transport and logistics clusters formation and development in Kazakhstan.

## 2. Material and Methods

Theoretical and methodological basis of the research constitute the basic principles of economic theory, general scientific representation in terms of logistics and material flows management, works of domestic and foreign scientists and economists about the principles, laws and methods of transport and logistics services formation and development in a market economy, legislation, Government Resolutions, Decrees of the Republic of Kazakhstan President on issues of transport and logistics infrastructure development and improvement of their effectiveness.

During the study methods of system, logical, statistical, regression analysis, economic and mathematical modeling was used.

## 3. Results and Discussion:

The term cluster in the economy has been applied recently. Ideas of E. Dahmen, E. Leamer, M. Porter, M. Todaro, M. Feldman, as well as the work of other economists are the theoretical core, which allows validating the consistency and regularity of world politics of clustering economy. The complexity of study and analysis on this issue lie in the variety of views on the concept of "cluster", as the basis is taken various characteristics of cluster, often reflecting a narrower scope of clusters as integrated entities in a particular field of activity (e.g., medical cluster, tourist cluster, diamond cluster, and others).

According to the classical definition of M.Porter, cluster is a group of geographically adjacent interconnected companies (suppliers, manufacturers, etc.) and related organizations (educational institutions, government, infrastructure companies) operating in a certain area, and complementary to each other (Porter, 1993; Porter, 2008).

In general, there are many different typologies of clusters, because of the large number and ambiguity of cluster characteristics used as classification criteria. So, in the monograph of M.Porter were analyzed in detail types of clusters and conditions of their formation, except for one type - transport and logistics.

In current practice the area of TLC is defined as administrative unit or complex of neighboring administrative units, typically - the city or conurbation. Transport and logistics clusters

belong to one of three categories: port TLC, boundary TLC, territorial (regional) TLC (Transport and logistics clusters in the European Union. Selective review of "Center for Innovation Development and cluster initiatives").

It is necessary to define the concept of transport and logistics cluster.

Among scientists, concentrating their attention on the problem of transport and logistics cluster, should be noted Gritsenko S.I. (2009), Lavrinenko Y.I. (2006), Shalabekova A.L. (2006), Morgan (2012).

According to Gritsenko S.I. (2009) transport and logistics cluster assumes association of individual regionally, functionally and economically interconnected logistics units; Lavrynenko Y.I. (2006) considers development of the cluster system in the field of freight transportation. The author (Shalabekova, 2006) concluded that the clustering of Kazakhstan transport complex is a vertically integrated system of transportation with a hierarchical form of government, where transport and logistics center is a fundamental element, wherein railway station should become the basis for the TLC formation in Kazakhstan.

Summarizing the comparative analysis of different authors, in our opinion, there are two types of TLC: first, a group of operating in certain areas, neighboring and related companies (suppliers, manufacturers, etc.) and related mutually complementary organizations; secondly, a group of interrelated and mutually complementary companies scattered along the international transport corridors.

Cluster, as it seems to us, is not necessarily rigidly connected with the territorial borders. Clustering is possible in almost all sectors of the economy. Clusters can combine enterprises of one or more areas, perhaps even several countries, or include one or group of industries. Cluster effect can be seen as the result of increasing the efficiency and competitiveness, growth in labor productivity and product quality, stimulation of innovation, promotion of new businesses formation based on their favorable geographical location.

In our opinion, presence of geographically proximate group of interconnected companies is not a mandatory element for the TLC. It is characterized by a group of related companies, distributed for servicing transport corridors, which geographically pass through many countries.

An example of such a cluster may be European Railway. In characterizing the specified cluster should consider several aspects, in particular activity on modernization and reconstruction of the highway and geopolitical effects, which may be in its operation. Modernization and reconstruction of

highway will affect not only regional but also international interests. It will require reconstruction of old and construction of new plants for the production of construction machinery, tracklayers, modern communication system, etc. Creation of such infrastructure can identify a tendency of growth in each region through which the highway. Highway will be an active point of regions economic growth.

Hence we can conclude that clusters can be formed on the basis of the most developed and foreground directions of transport corridors. For example, the formation of TLC «Trans-Asian Railway in Kazakhstan».

**Transport and logistics cluster** in its structure is complex mixed. On the one hand, it has an industrial character since the majority of its subjects and participants (carriers, freight forwarders, terminal owners, sea and river ports, airports, railways, etc.) refer to the transportation industry. At the same time, cluster usually includes information, insurance companies, customs representatives, financial institutions, service firms, large shippers and consignees, which give the interdisciplinary nature of the cluster. Forming on the territory of region, country or area of international transport corridors, TLC may be regional, inter-regional, national and global.

In our opinion, main characteristic features of TLC, are as follows: heterogeneity (providing a variety of transport and logistics services in the process of transportation from the supplier to the consumer); presence of integration ties (organizations for collection, transportation, etc.) and synergy (profit from providing quality services). Inside TLC can be allocated smaller clusters. Each generated cluster unit must also meet the following characteristic features.

Summarizing the above, it can be noted that TLC as the object of Kazakhstan MLS, formed not only within the boundaries of a single region, but throughout the route of transport corridor. The core of the cluster should be transport and logistics center.

For the realization of Kazakhstan main competitive advantages in the sphere of transport logistics, we have defined the factors and conditions of TLC, which as a new and effective form of network organization and management of transport and logistics services, must meet the following basic requirements: provide competitive transport and logistics services; operate simultaneously on the principles of competition and cooperation of the cluster components; be innovation-oriented (technology, management), include not only the basic structure, but also the adjacent and providing segments (infrastructural, logistical, financial, educational, etc.).

In this regard, we believe that there is a need to define the cluster model of transport and logistics system, which, in our opinion, can be defined as spatially defined totality, cross-sectoral and inter-regional voluntary association and sustainable partnership between related companies of various industries, transport and logistics, including transportation, warehousing services and facilities, due to their close integration and deployment within and along transport corridors and working closely with research and educational institutions, central and regional authorities, the result of which is the growth of labor productivity, optimal use of resources as well as the emergence of economies of scale and synergies. The ultimate goal is to improve the competitiveness of the domestic and world market of transport and logistics services.

Clustering involves use of a number of concepts and approaches, among which are (Shinkevich, 2007): the concept of cluster development based on boosting competitiveness of meso-system, the concept of cluster self-sufficiency, the concept of flows centralized planning and logistics concept based on flow optimization (material, financial and informational).

In addition to them, in our opinion, can be attributed, for example, the concept of national and regional MLS development in Kazakhstan in the form of TLC. As it seems, the national MLS will help build a unified framework for the logistics of the country as a whole. However, for the most efficient operation it is necessary to consider regional aspects (Klimenko, 2011). MLS formation in the form of TLC will improve passage of main cargo through international transport corridors and coordinate inter-regional movement of material and associated information flows, improve the efficiency of interaction between TLC participants and stimulate its innovative development.

In this regard, we believe that the main core of the TLC formation is not the goods, as many authors consider, but TLC.

When forming TLC the following is considered.

1. Resource principle of TLC formation.

Trucking considered as the core of TLC. The main task is to determine the amount of its resource base. Cargo (industrial and consumer) is the basis of the resource base.

2. Sectoral principle. TLC consists of two business components: a cluster of transport services and logistics services cluster.

Formation of smaller clusters bases on the sectoral principle. Formation of small clusters of logistics services is provided by their types, by

morphological principle, for example, incomplete logistics services, comprehensive logistics services.

Cluster of transport services (business principle) includes a cluster of terminal container transportation; cluster of rail and road transport, cluster of seaport and transport; cluster of forwarding services.

Cluster of logistics services (morphological structure) includes a cluster of storage services, cluster of integrated logistics services (complete outsourcing), and cluster of incomplete logistics services.

#### **Mechanism for organizing transport and logistics cluster and its management.**

The basis of TLC elements interaction is the organization of control processes. The problem of control processes organization is quite complicated, and still in the economic literature has not developed consensus on its nature and content. In connection with this, in our opinion, organization of management processes constructed in accordance with the basic principles that reflect the legitimate relationship between cluster members.

Main principles and provisions of a systematic approach, applicable in the synthesis of complex social and economic facilities, require clarification and specification in the synthesis of TLC with regard to their regional and functional features and are as follows:

1. Regional TLC is a complex dynamic hierarchical and stochastic system consisting of many interacting and interconnected elements - links of TLC with their multi-level hierarchical structures.

2. Units (elements) of regional TLC characterized by relative stability of target and functional purpose, but for regional TLC in general they have elements of uncertainty and instability in force of interoperability and opportunity of logistics functions aggregating and depend on what goals and strategies are taken by individual structural elements of TLC, which institutional structure in accordance with it forms.

3. Each region having its feature as an object of study is unique in terms of having its specific regional factors of reproduction system, established industrial, economic and transport and economic relations, socio-economic and demographic as well as a number of other processes, most of which are stochastic or subjective (subject only to the qualitative assessment).

4. In the synthesis of regional clusters is advisable to use the integrated logistics paradigm implementing the overall strategic, tactical or operational objective of TLC business participants with the optimal use of material, financial, information and human resources and agreeing of

local criteria for the operation of TLC units with the global target of optimization. Target function of optimization in this case is usually multi-criteria.

5. Important system characteristics of TLC as a self-adaptive structure realizing business goals of its members in a changing market environment are reliability, stability and adaptability for maintaining equilibrium of the system under uncertainty.

6. Management of cluster cannot be fully formalized, which causes the need to build complex of formalized models and informal (heuristic) procedures and views.

7. Information- computer support should cover the largest possible number of management processes and cluster objects.

Main thesis, in our opinion, should be considered acceptance of the principle of cluster innovativeness, based on the innovative transformation of all sectors in each region and realization in each region of national projects in the field of high technology with demonstration of the possibilities of science education at the initiative and with the active participant of Coordinating Council of Logistics, in particular, we are talking about TLC.

In accordance with the principles management processes organization can be represented as a purposeful interaction in space and time of all elements of the TLC control system to ensure implementation of the process for making and implementation of management decisions in order to increase economic efficiency.

Particularly it is difficult to organize the governance process in multi clusters, which are units of different companies: support, related, and providing and etc. In connection with this business process management must comply with the dedicated basic principles. For this, a framework of goals is developed and target subsystems are allocated. Between the elements of the target subsystem dominate horizontal ties of cooperation. This implies the following approaches to the target subsystems management.

Functional approach to management processes ensures conformity system elements to management functions. Resource approach to cluster management focuses on the efficient use of all resources.

Thus, business processes determines the relationship of target (control transit, external, internal transportation and supporting companies), functional subsystems (infrastructure modernization and innovation incentives, coordination of material flows) and resource subsystems (informational, organizational, methodological, technical, etc.) software.



In summary, we can draw the following conclusions:

- The basis of interaction is organization of management processes, including goal setting, task list aimed at solving of main objectives by interacting of subsystems governing the exercise of the functions of forecasting, planning, coordination, motivation, monitoring, accounting and analysis;

- Business flow processes constructed in accordance with the guiding principles: consistency, systematic approach, system-wide optimization, stability and adaptability, harmonization and coherence; relevance of self-organization and self-regulation, support and encourage self-organizational tendencies.

In its development, the TLC, in our view, must go through several stages and consists of the following levels (see Figure 1): first level is the lowest level of interaction between the terminal and cargo facilities, storage facilities and transportation companies. This level is characterized by weak coupling and low-level interaction between participants of transport and logistics services, and as a result, the poor quality of services, high costs and low income.

On the second level are formed TLC of different levels (international, regional and local). TLC interacts with other members of transport and logistics services, regional clusters based and other clusters on the basis of the contractual relationship.

At this level, a high degree of interaction, but communication with the members of the regional MLS is weak, thus, a range of services is within a limited center.

At the third level are formed vertically integrated regional TLC, characterized by a high degree of communication, not only within the transport and logistics center, but also outside it, synergy effect applies to all members of the regional economy .

At the fourth level are formed integrated, both on vertical and horizontal level, TLC with high level of interaction, providing increase the region's competitiveness.

In the future, regional transport and logistics systems and regional TLC will transform into integrated national transport and logistics systems.

Representation of transport and logistics systems as multifunctional, multi-layered and multi-purpose system (Figure 1), which includes inputs, phase of various resources transformation, outputs, and interactions with the environment, involves a complex and varied composition of goals and mechanisms to achieve them. Because of this control mechanism, as part of the management system, aimed at harmonizing the objectives put forward the interests of cluster participants by selecting resource management.

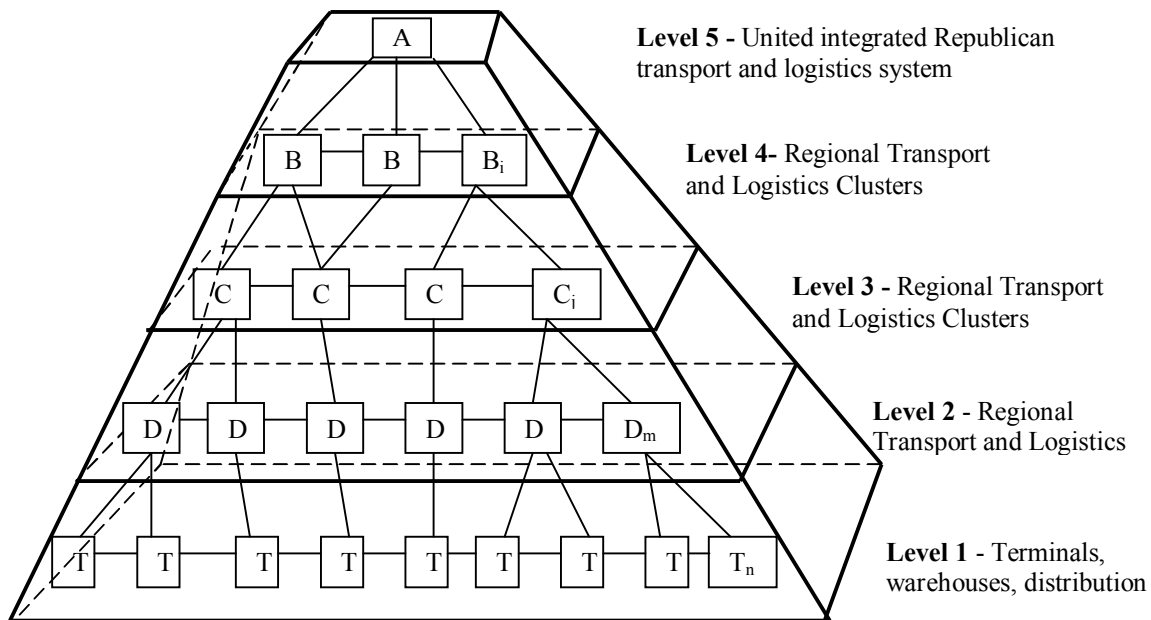


Figure 1. The Structure of United Integrated Transport and Logistics System of Kazakhstan

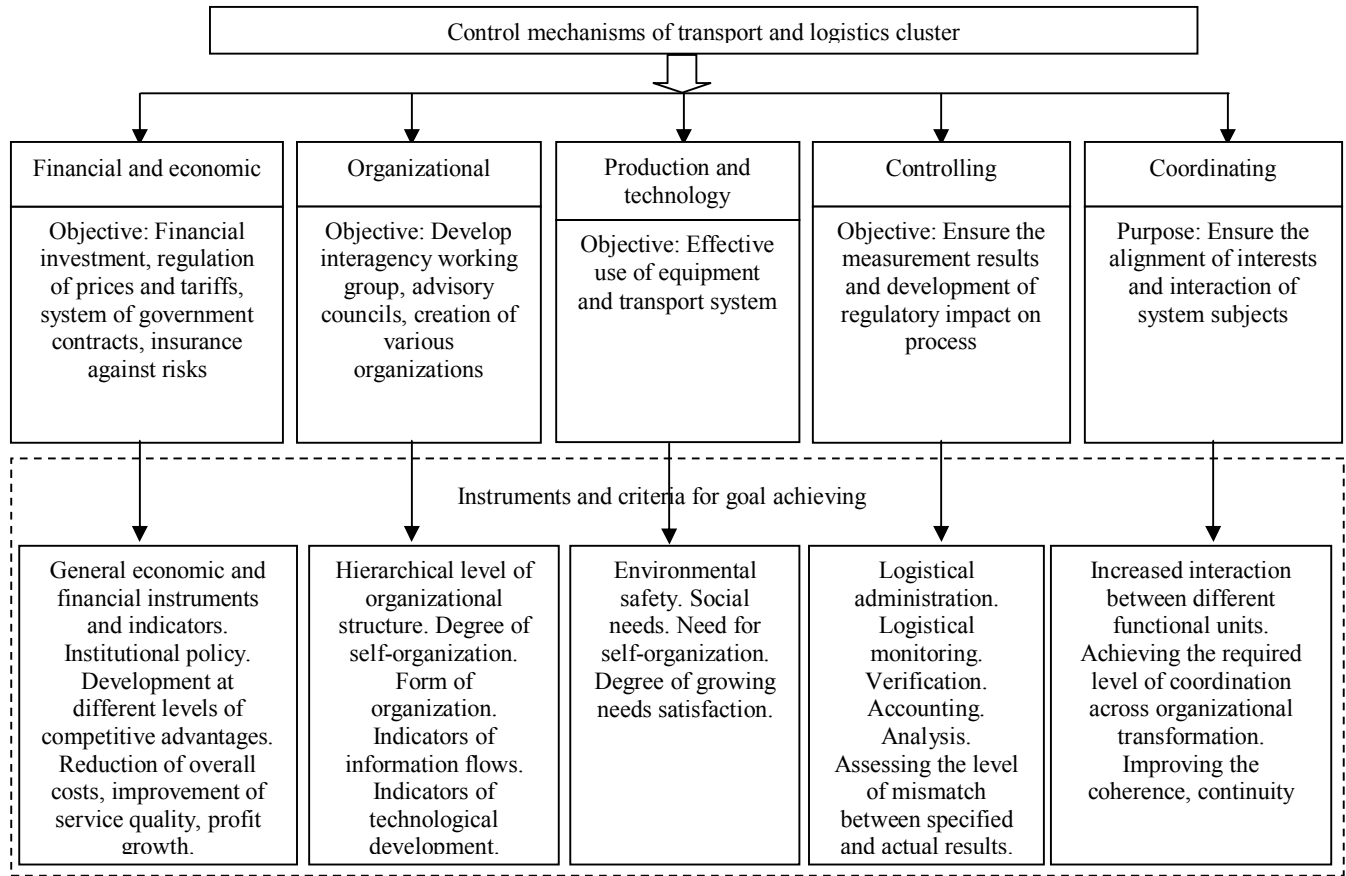


Figure 2. The Structure of Transport and Logistics Cluster Control Mechanism

In this case any activity of transport and logistics system and cluster participants pursues a specific goal, which is achieved by certain actions performed in strict sequence. In this sense, in our opinion, we should talk about the management mechanism, as a complex of multi-level system consisting of subsystems or mechanisms that reflect certain aspects of transport and logistics activities of cluster members. The main objectives of TLC are efficient movement of goods and use of transit potential, improve the quality of freight forwarding services. Sub goals are meeting the needs of cargo owners and transport workers.

Achieving of TLC sustainable development is provided by effective control mechanism, as it affects and mobilizes use of technical, scientific, industrial and technological, financial, economic, institutional and logistical capacities of transport and logistics system.

Figure 2 shows offered by us the structure of mechanism for TLC sustainable development. System objectives are achieved by various methods and instruments: economic, social, institutional, legal, administrative, motivational, coordinating, and supervising and others.

Crucial to the success of policy has institutional mechanism for implementing the priorities of government and commercial structures. Institutional mechanism promotes development of structures of innovative infrastructure at the regional level, providing logistical, financial, consulting and other services for subjects of innovative activity.

The main organizational mechanisms for implementing this concept should be: 1. Formation of Interagency work group on the implementing of cluster policy in Kazakhstan 2. Formation of Advisory Council on the implementation of cluster policy at central and regional executive bodies; 3. Formation of specialized organizations of cluster development, in which registration is valid in various legal forms.

Financial and economic mechanism of government priorities implementation by the state and private capital is carried out through the use of institutions and means of influence, including the system of budget allocations, system of prices and tariffs regulation, innovative system of venture funds, system of government contracts, formation of stocks, purchases and insurance risks, implementing enabling customs, tax and credit policies.

Industrial-technological mechanism for implementing the priorities of innovation is intended to efficient use of equipment and vehicles, causing the release to market of new competitive products and services.

Controlling and coordinating mechanisms provide measurement of results, development of regulatory impact on the process, and provide coordination of interests and interaction of system entities.

In order to ensure a dynamic and effective management of Kazakhstan innovative development, timely corrective action in carried out state scientific and technological innovation policies Government organizes systematic monitoring of priority innovative directions implementation.

Basic instruments and criteria to achieve objectives are general economic and financial instruments, level of organizational structure and its performance; social needs, logistic administration and other.

Logistic cluster administration will solve the problem of administrative barriers. Residents will be granted with tax and customs privileges in exchange for investments. Investment sources of transport and logistics infrastructure may be: budget, targeted loans, private capital when creating paid roads, concessions and other.

In the scientific literature the problem of transport and logistics potential of cluster is still not deeply studied due to the need to develop methods of quantification and detection of hidden reserves in conditions of TLC functioning. Transport and logistics potential of the cluster is the ability of region under favorable conditions to optimize the structure of resources and rational use them to achieve goal.

According to the synthetic approach, in our opinion, the concept of transport and logistics potential is integrated function, consisting of the following major groups of factors: general economic indicators characterizing the overall level of region development and conditions; performance level and quality of provided services; performance of transport and logistics sector, indicators of transport infrastructure, indicators of logistics infrastructure; institutional indicators for the cluster.

The basis of logistics potential formation lies justification of resources needed to ensure the required level of quality of logistics services. The main task of TLC development is to ensure the optimization of their logistical capacity. Achieving optimal logistical capacity is made possible by the synthesis of its constituent parts; they are resources, capabilities and operating conditions of the TLC.

In quantitative evaluation transport and logistics potential  $L$  of transport and logistics cluster is functional relationship  $F$  between the level  $S$  of provided service by the economic subject  $k$  under certain conditions and factors  $C$  to optimize the structure of resources  $R$  and rationally use them to achieve goal:

$$L_k = F(S, C, R) \rightarrow optimum. \quad (1)$$

Achieving optimal logistical capacity is made possible by the synthesis of its constituent parts - resources, capabilities and operating conditions of the TLC. The main criterion of optimization for the general model of synthesized components of logistical capacity is a minimum total of logistics costs. Optimization of the objective function  $L_k$  by minimizing the total logistics costs over the network of transport and logistics chains involves determining the resources required to ensure a given level of logistics services in the regional, inter-regional and sectoral conditions of TLC. Then

$$L_n = \min \sum_{s=1}^S \sum_{c=1}^C \sum_{r=1}^R E_{scr} \quad (2)$$

where  $E_{scr}$  is total logistics costs attributable to the implementation of  $s$ - $x$  capabilities of economic agents, providing of  $y$ - $x$  TLC operating conditions, use of  $r$ - $x$  resources.

Kazakhstan has initiated the development of its economy on cluster principle. In 2004 started the project "Diversification of Kazakhstan's economy through the development of clusters in the non-oil sectors of the economy". The whole project bases on the cluster approach.

Main objective of Kazakhstan cluster initiative is creation of conditions to maximize competitive advantages of Kazakhstan in the development of non-oil sector of the economy through the involvement of private business entities into industry (Diversification of Kazakhstan's economy through the development of clusters in the non-oil sectors of economy).

In our opinion, TLC formation should go in the following directions.

First - TLC on Kazakh section of a transit corridor "North-South" towards the boundary of the Chinese national republic (Dostyk, Khorgos) – Taldykurgan – Almaty – Taraz – Shymkent – Kyzylorda – Atyrau, Aktau with access around the perimeter of the border regions of the Central Asian States. Zone of influence includes 7 large regions of Kazakhstan, producing about 55 % of GDP.

Second - TLC for communication corridor "North Kazakhstan - West Kazakhstan": the northern axis will develop in the direction Ust –Kamenogorsk



– Semei – Pavlodar – Astana – Kostanay (Kokshetau, Petropavlovsk) – Aktobe – Uralsk with access to the Caspian (Atyrau, Aktau) and Almaty (Taldykurgan, Dostyk) territorial and economic systems, and around the perimeter of the axis - on the border regions of Russia .

Third – TLC on corridor Central axis of development will develop in the direction of Astana – Karaganda – Almaty with branches in Balkhash, Dostyk and access to China, as well as with the prospect Zheskazgan towards seaports in Western Kazakhstan.

Running the cluster model of Kazakhstan development will allow obtaining a multiplier effect through the inclusion of the production and service provision of an increasing number of related industries involved in the cluster formation. Multiplier determined by the ratio of the equilibrium proportion of GNP incremented directly in cluster formations to change the investments volume that caused this increase.

Ensuring the implementation of the strategy of TLC advancing development in Kazakhstan will get an overall socio- economic impact.

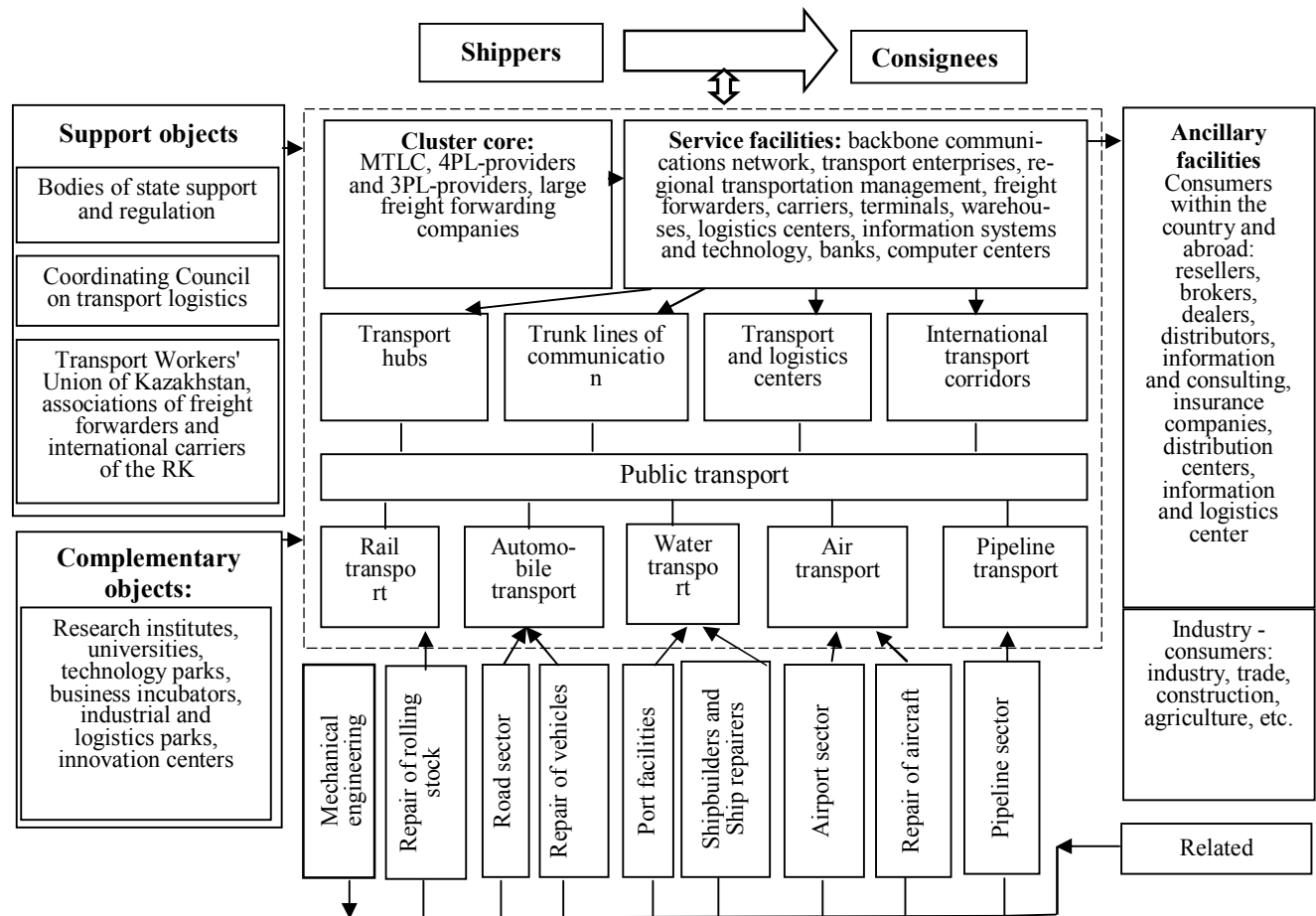


Figure 3. Organizational and Functional Structure of Transport and Logistics Cluster

The chain reaction of related industries of TLC development will provide economic benefits also due to: money multiplier, income multiplier and taxes. Further economic development in the framework of this concept will bring competitiveness as a region as a whole, and individual industries, to a new level by combining the efforts and resources of the contracting parties. This will fully realize the potential of logistics, the micro -, meso-, and macro-level, through a clear concerted action of all parties involved in the reproduction of GDP.

When building a cluster model of TLC can distinguish the following structural elements (see Figure 3).

The cluster core and non-core four blocks are the main components of the model: service, complementary, support and related.

Conducted by the division into major and minor units TLC model enables to determine logistics intermediaries that perform key functions and provide system operation. Thus, TLC provides the leading cluster functions, as well as horizontally and

vertically integrated systems located in the region, which together account for transport and logistics system.

The basic unit consists of the cluster core. "Core" are the objects, around which cluster is grouped, operating core business, positioning the cluster, producing the final products or services with regional specialization and geographical advantages of the region.

Core of the regional TLC may be such structures - leaders as multimodal transport and logistics centers (MTLC), 4PL- providers and 3PL- providers, i.e. service providers (freight companies) and companies representing innovative services (information systems and technology; company forwarding services, new organizational forms, automatic identification systems and satellite tracking of goods , fast delivery of goods) , transport and logistics infrastructure, allowing direct interact with other members of the cluster.

1. Supporting industries: administrative resource, bank resource, human resources.

2. "Complementary objects" are objects whose activities directly provide "core" objects functioning. For example, research institutes and laboratories, educational institutions, industrial parks, business incubators, science cities, industrial and logistics parks, centers of competence and innovation.

3. "Service facilities" are objects whose presence is required, but activities are not directly related to the operation of "core" objects. To service facilities can be attributed enterprises realizing the service functions of the cluster, i.e. information, sales, repairs, etc. In addition, service facilities include a financial center of cluster, i.e. banking structure, carrying out financial support of cluster enterprises activity.

4. "Ancillary facilities" are cluster objects whose presence is desirable, but not necessary for the functioning of other objects in the cluster. These include various service-consulting companies, whose functions may be implemented in the cluster, and with the help of outsourcing. In addition, these objects include various institutions of financial capital, not part of the financial center. The purpose of these companies, if they exist in cluster, is to find internal resources to ensure continuity of the reproduction processes, achieve strategic benefits associated primarily with increased mobility of development and implementation of the entire cluster technical capacity.

5. Related industries: mechanical engineering, repair shops of transport, roads, etc.

Presented at the Figure 3 model of regional TLC is typical and reflects its overall structure. It

should be noted that in each region the model will have its own specific, reflecting the region's specialization, level of socio-economic development, nature of the productive forces distribution, mark of the transport network, placement of transport and logistics infrastructure facilities, size and structure passing and forming regional traffic and other.

Thus, TLC is a system of organization, management and control of goods transportation, provides functional and technological services and support of unified system of information flow, coordination of producer and consumer requirements as to the quality of the product itself, as well as to the efficient organization of its delivery; communicative exchange between participants in traffic, transportation, freight forwarding, insurance companies, financial and lending institutions, customs and other government agencies.

TLC creation entails only their integration as various members of the economic relations.

TLC implementation will provide cumulative effect of competitive advantages maintaining compared to commodity-oriented regions. In our opinion, the basis of the economic effect will be economies of scale as a result of:

- Use of infrastructure, costs of which are of a permanent character;
- Better use of basic production assets;
- Creation of logistic units in small segments of market;
- Expansion of interregional economic relations.

Individual cluster segments, such as TLC, terminal facilities, information networks, container transport can give their microeffects within the overall outcome of the program. From a well-functioning cluster state will receive additional budget revenues, new jobs, growth of the international image and domestic economic stability and development of highways. TLC for private businesses will increase the volume of work and ability to extract additional revenue, increase production and economic potential and the level of competitiveness, international prestige and investment attractiveness.

#### 4. Conclusion

Formation of TLC is one of the main requirements of transformation of established regional governance system and public policy to improve the regions competitiveness, into network form of cooperation of market economy subjects, built on the principles of cluster development model.

Further economic development in the framework of this concept will lead the region's competitiveness as a whole, and individual industries, to a new level by combining the efforts and resources

of contracting parties, through clear concerted actions of all involved parties.

In our view, the cluster model of regional development is one of the best options for increasing the competitiveness of Kazakhstan on the world market.

This concept allows fully using of the synergies resulting from the integration of market participants and to bring basic industries to a new level.

World practice already has sufficient experience in the development of clusters in key sectors of economy, which gave positive results of using existing advanced techniques. But it is necessary to look through the prism of territorial and sectoral and national peculiarities of our economy functioning.

Transport and logistics clusters considering regional features allow in prospect: to create a single European-Asian transport system with a common infrastructure, to ensure the free movement of vehicles and free movement of goods, to create conditions for effective functioning of the national network of international transport corridors and logistics centers in a mutually beneficial and equitable base; consistently generate tariff policy for transport and communications in accordance with international standards of integrated freight forwarding service.

#### Declaration of Conflicting Interests

The author (s) declared no possible conflicts of interests with respect to the authorship and / or publication of this article.

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