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Research paper



Research of the Problems of Financial Support for the Development of Transport Infrastructure in Kharkiv Region

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Abstract

The purpose of the article is revealing the problems of development of transport infrastructure of the region from the financial standpoint, analysing modern approaches to the development of transport infrastructure at the regional level and the financial aspects of its support.
It was found that public entities and local authorities have difficulties in financing development of transport infrastructure by state structures and local self-government bodies without any support. It was determined that Kharkiv region is one of the regions with the most developed transport infrastructure, which comprises railways, auto transport, and aviation. The region has a developed system of public transportation. It was justified that in order to maintain and develop the infrastructure of Kharkiv region, the strategic directions of the development of the region should be defined and the plan should be developed to attract investment which will have positive influence on the economy of the region. A number of measures must be taken for solving the problems of the transport infrastructure in Kharkiv region, but these activities require investment in the transport industry that cause difficulties in recessionary environments.
The set of targets for solving the problems of funding the development of transport infrastructure of Kharkiv region in the context of the Ukrainian National transport strategy for the period up to 2030 has been developed. The comparative description of sources of financing has been considered. As the results, the best option of financing the transport infrastructure has been selected as the combination of budget resources and other sources of funding (funds from international financial organisations, state guarantee loans, funds of investors, PPP). Detailed elaboration of such a mechanism should be the subject of further research in this area.

Keywords: *development; financing; joint financing; public-private partnership; transport infrastructure of the region.*

1. Introduction

Transport system plays an important role in the functioning and developing of the region's economy, providing communication with production and consumption. It is the catalyst of economic activity and movement of material flows. Transport system provides the mobility of labour forces and satisfies the needs of population in transport. Well-developed transport system makes the frame of regions and the base for territorial division of labor. That stipulates the dynamics and effectiveness of social and economic development of the regions and the whole country. At present, transport system of Ukraine and its regions is characterized by a deep systemic crisis, since the infrastructure and level of organization of transportation does not meet the needs of society and the European quality standards of transportation, which are constantly growing. This reduces the efficiency of functioning of the transport system of the region and induces further development of transport system of the region as a significant part of its infrastructure.
The theory of development of transport system of the region was reflected in scientific research of such famous scientists as E.M. Ahromkin, K.A. Andrushchenko, M.N. Bidniak, V.G. Galaburda, P.F. Gorbachov, A.A. Dergousova, V.L. Dikan, D.V. Doroshkevich, N.O. Iksarova, I.I. Kara, V.S. Kozlov, O.P. Kravchenko, N. V. Kudrizka, V.V. Malikov, M.V. Makarenko, Y.V. Makogon V.M. Nazarenko, A.M Novikova, V.I. Pacichnik, O.B. Pikulik, Y.S Rogozyan, E.A. Safronov, O.E. Sokolova, M.L. Tarakanov, N.Y. Tkachenko, L.G. Chernyuk, N.V. Yakymenko etc. The analyses of theoretical and empirical achievements of these authors allows stating that at present the regional infrastructure remains underdeveloped. That makes the necessity of development of new approaches to the development of transport system of regions in the context of their infrastructure support by introducing extensive international experience based on the use of the advantages of logistics approach and activation of additional investment mechanisms. The need for forming the theoretical foundations and practical recommendations for the development of transport system in the context of infrastructure support of a region has led to the choice of the subject of the research, its purpose, tasks, structure, directions and structure.

2. Categorical Apparatus

Infrastructure takes a key place in the development of the economy due to its connection with the productive forces and territorial allocation of resources, as well as efficient functioning of the sphere of material production. Infrastructure construction of country's economy, on the one hand, depends on the pace of modernization, and, on the other, is a provider of economic growth.
Infrastructure development depends on the specific sectors and regions and is carried out in accordance with the changes in the production sphere. The main peculiarity of the structure of production in modern conditions is a growing reliance on sectoral and regional system of economic entities. Nowadays, the need for the development of the infrastructure components existing in Ukraine is quite urgent. Today, the main directions of market transformation of infrastructure in the cities and regions of our country are

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based on the Resolution of the Cabinet of Ministers of Ukraine „On approval of the State Strategy for Regional Development in the Period up to 2020".

The transport system is one of the main characteristics of the development of the region. The territory forms an impression on certain external signs. One of them is the regional transport system: every visitor first notices the problems of transportation. The first impression depends on the development of the transport system resulting in the development of territories.

In general, transport is a specific communication infrastructure industry of material production and service sectors, which meets the needs of the population and enterprises of all types of transportation. It is also the material basis of the external and internal industrial technological relations in the country. Transport participates in the shipment of semi-finished products, raw materials, finished products, materials, and also includes passenger transportation. Transport is necessary for the territorial division of labour, specialization of regions, and regions complex development. Transport factor influences the allocation and sectoral structure of production, the rational distribution of production [2, p. 179].

Based on the definition of transport infrastructure, we can determine its main components (Fig. 1).

Table 1: The analysis of approaches to interpretation of the category "transport infrastructure"

The author, the source	Interpretation of the category "transport infrastructure"
CMU Resolution [3]	Transport infrastructure is a complex of constructions and road system of all types of transportation which satisfy the needs of population and production in freight and passenger transportation
Maksimova P. [4]	Transport infrastructure is an element of market infrastructure, uniting manufacturing, distribution, circulation and consumption into a single chain. It provides the turnover of material, financial and information flows in the regional economy. It forms the spatial network structures, in which all the elements are connected with each other at the level of their region and with other levels. The nodes of these networks are transport and logistics companies and organizations
Pikulik O. [5]	The transport infrastructure of a region is an aggregate of transport communications and objects for providing the service of passenger and freight transportations, and objects of maintenance and overhaul, which create conditions for rendering transport services, i.e. movement of freight and passengers
Poteeva M. [6]	Transport infrastructure is a set of material, human, organizational, financial, economic factors and regulations, which were created in the country to provide sustainable and efficient transportation of passengers and freights in all spheres of public recovery process
Sokolova O. [7]	Transport infrastructure is a set of transport routes and points of all kinds of transport and ancillary equipment, aimed at direct maintenance of roads and transport
Tkachenko H. [8]	Transport infrastructure is the elements of the general infrastructure (buildings, structure, devices), which provide the operation of different modes of transport (transport vehicles). It is impossible to transport freights without the material base of freight transport (e.g., railways for trains, station for pumping of oil products for pipelines, etc.), or it is not cost-effective (e.g., motor roads for lorries and passenger buses)
Fastovets O. [9]	Transport infrastructure is the set of traffic communications, means of transport, management and communication, as well as complex of technical facilities and devices that ensure its functioning

Compiled by the authors according to the sources [3-9]

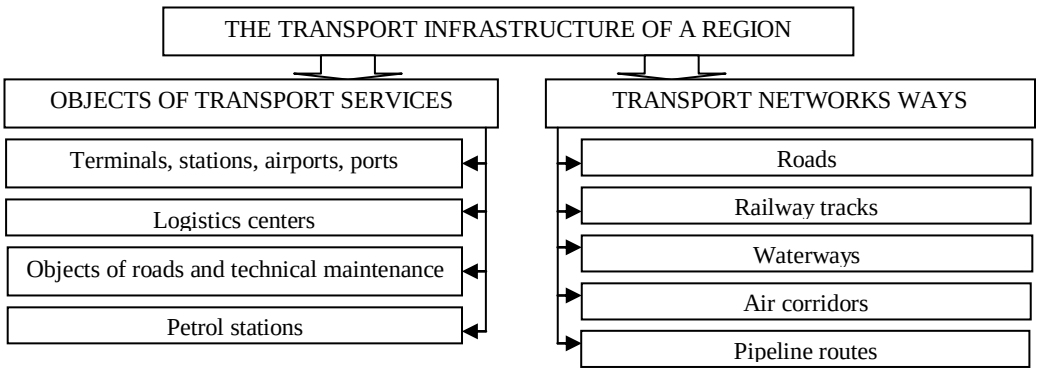


Fig. 1: The scheme of transport infrastructure of a region Developed according to source [10, 11]

3. Results of Empirical Researches

The research of transport systems in different countries shows that the level of its development depends on the development of transport infrastructure. Poor development of transport infrastructure is one of the most important indicators of recession in the regional economy. Without the proper infrastructure of transport system, the regional economy cannot exploit the full potential of economic development. It is difficult for public entities to deal with this issue.

The further integration of Ukraine into the international system transport system provides for international transport corridors with new directions. Underfunding of transport infrastructure and the growing gap between the growth of volume of transport and transport network development has become a global trend over the past few decades.

An important indicator of transport system development is investments in transport infrastructure, which is calculated as a percentage of GDP. According to International Transport Forum, this indicator accounts for not less than 1% of GDP in many countries of the world for nearly half of a century. This figure is a universal point in assessing the level of funding of transport infrastructure of the country. However, in the separate groups of countries it has seen the opposite trends. It has been spent up to 4 % of GDP on construction and development of roads in the world's leading countries, whereas in Ukraine this figure is less than 1%. About $5.500 per 1 km of roads is spent on the development of transport network and its maintenance. That is 2.4 times less than in Belorussia, 3.1 times less than in Poland, and 8-9 times less than in the European Union [12].

However, the modern road cannot be cheap and of proper quality at the same time. According to Ukravtodor, the cost of repair of 1 km of the roads in Ukraine accounts for 5-6 million euro, and the use of new technologies and materials, recognized in the world, brings the cost of works closer to the European level of 7-10 million euro per 1 km.

For the effective development of Ukrainian transport the systematic problems, which need comprehensive solutions at the state level, should be solved by the implementation of transport strategy.

At the state level, there is no strategic vision of competitive advantages of transport and road industry in comparison with other countries, prospects of development of transit shipping based on world market and global production specialization of countries. This diminish the potential for Ukraine's integration into the world transport system and participation in transnational freight and passenger transportations.

Kharkiv region has an average level of infrastructure development. Over several years it takes 5-8-th place among all regions of Ukraine, with an index of 1.1-1.15 [13]. Kharkiv region is one of the regions with the most developed transport infrastructure, which comprises railways, auto transport, and aviation. It also has a developed system of public transport. Furthermore, Kharkiv holds number one position in Ukraine for the length of roads (more than 9,600 Km), with almost 98% of them having solid surfaces.

However, in general Ukrainian rating of regions on the basis of the level of development of transport subsystem Kharkiv region has the 7th place (index is 0,9902) [13]. Primarily, this is due to decreasing level of freight and passenger traffic, over the last years because of the reduction of international transport routes. The density of roads and railways over this period has not changed, but the condition of roads has worsened.

4. Proposals

In order to maintain and develop the infrastructure of Kharkiv region it is necessary to define the strategic directions of the development of the region and to develop the plan to attract investments. That will positively influence on the economy of the region. For solving the problems of transport infrastructure of Kharkiv region, the following measures must be taken:

- enhancing the quality of road surface;
- improvement of tariff policy;
- preparation and implementation of the regional program of upgrading the rolling stock (competence of local authorities);
- switching to service scheme: one region is one basic carrier;
- development of transport-transfer units (common competence), ensuring the stability of city transport work;
- updating the stopping complexes;
- transparent tenders on choosing carriers;
- measurements of passenger traffic for the creation of route network;
- definition the actual amount of compensation for transportation of preferential category passengers;
- introduction of a single electronic tickets for all types of transport;
- monitoring of compliance with road traffic regulations.

But all these activities require investments in the transport sector that causes difficulties in recessionary environments.

The analysis of theoretical and empirical studies showed that the increase in the accumulated transport infrastructure capital raises the level of GDP, whereas the total influence of factors, with effective infrastructure, also expands the range of profitable investment opportunities and encourages the inflow of investments. Taking into account the approaches of foreign scientists, the authors are outlined the following effects of development of transport infrastructure, which have a positive impact on the development and expansion of the regional economy:

- the effect of direct productivity;
- the effect of interchangeable elements;
- the effect of accumulation of the factors of production;
- the effect of aggregate demand growth;
- the effect of industrial policy instrument;
- the effect of infrastructure growth;
- the effect of related industries and coverage.

In order to stimulate investments in the transport infrastructure, the EU countries use the common transport policy, which plays an important role in enhancing the economic and social integrity of the EU. It has been found that the main task of the joint transport policy at the present stage of development is to make travels safe, ecological and fast.

The European integration vector of the government policy makes the standards for rendering social services improvement and development of infrastructure in Ukrainian regions corresponding to the highest requirements. The transport infrastructure belongs to strategically important elements of regional development, which includes provision of internet access to public services for the population in remote areas, the tourist potential of the country and strengthening production connections between administrative-territorial units. Thus, the efficiency of production sector, the development of tourism sector, and social sphere depend on the state of transport infrastructure, including road infrastructure. The problems of financing of transport infrastructure and socially important projects in this area have been investigated by such Ukrainian and foreign researchers as A. Bagdaev, Y. Bajal, F. Bastia, I. Burakovsky, V. Heyets and others. Despite the considerable contribution of Ukrainian scientists, issues of financing of transport infrastructure remain opened. In that regard, it is necessary to establish effective methods of financing the modern transport infrastructure at the regional level.

According to the national transport strategy of Ukraine for the period up to 2030, as regards the development of transport infrastructure of Kharkiv region and its financial support, there is a number of tasks that need to be solved towards resolving this problem [14]:

- introduction of mechanisms of encouraging the gradual modernization and development of transport infrastructure, renewal of vehicles for the needs of the industry;
- implementation of effective tax mechanism and attraction of private capital to the development of rail transport, and encouraging of renewal of traction and other rolling stock in particular; and the aviation and to the implementation of the strategic plans in aviation, the modernization and development of airports infrastructure and provider of air navigation services;
- introduction of the public-private partnership (PPP) mechanism for the implementation of projects in the development of transport infrastructure at the state level;
- development and realization of the program (action plan) of the renewal of railway rolling stock, including the rolling stock for high-speed passenger and multimodal freight transportations;
- improvement of the financial model of support of the aviation infrastructure development and the realization of the strategic projects for the airports, including by means of public-private partnership and complex international financing programs with preferencial treatment;
- shift to the planning budgeting in the medium and long term, with a clear understanding of the road network functioning;
- functioning of the State Road Fund and targeted use of funds;
- stable financing of the road maintenance of region importance by the local budgets and partial funding by the State Road Fund;
- regulation on a legislative level the issue of creation of a simplified mechanism of recovery and purchasing of land plots for the development of transport infrastructure, the transfer of land to concession for the construction of roads and registration to enterprises and transport organizations;
- creation of the legislative base and economic mechanisms to facilitate localization of the best innovative technologies in the construction of transport infrastructure, the production and upgrade of rolling stock on the basis of domestic enterprises, in particular the stimulation of the development of their foreign economic activities by establishing the customs privileges;
- efficient use of funds and preventing the corruption in implementation of projects of transport:

- working out a transparent priority-setting mechanism, technical and economic feasibility and cost-efficient analysis and incomes, transparent rules of public procurement system;
- introduction of long-term financial planning in accordance with the strategic priorities, deadlines for ticket sales and the life cycle of the objects, with priority projects connected with the TEN-T Network;
- creation of an unified system of coordination, planning, and monitoring of international assistance for effective investment distribution in priority areas of the transport industry;
- introduction of publication of financial and operational information activity of state-owned enterprises, ensuring the transparency of their financial flows;
- providing state guarantees and protection of investors;
- development and implementation of mechanism of investments into strategic investment and innovation projects;
- introduction of the unified system of taxation for all subjects of entrepreneurial activity, engaged in the same type of activity.

As a result of the permanent underfunding of the road sector there are more than 90% of highways in an improper transportation and operational state, 40% of which needs full renovation. In 2016, the financing was sufficient only for 1% of the road length, in the current year the funding will cover just 2 % of roads financing.

Since the beginning of 2018 the Road fund allocates funds only to the renovation and construction of roads with targeted funding of local roads. Allocation of the sources of financing of road infrastructure in a certain fund will help to ensure the stable funding and will prevent investment for other purposes.

Roads decentralization reform provides the gradual introduction of road fund. The revenues, which identified for filling the Fund, will come to the fund as follows: in 2018 - 50%; in 2019 - 75%, and in 2020 - 100%. 35% of funds were spent on financing the construction, reconstruction, repair and maintenance of roads of local importance.

These funds will be automatically distributed among local budgets, depending on the length of the roads of local importance of the region on January 1 of the year that proceeds the plan year.

Kharkiv region has a developed network of roads, therefore it gets more funds on their repairs. The length of public roads of local importance in Kharkiv region is 7,328,900 km. The expenditures from the road fund in 2018 year on the roads of local importance are 708,2 mln. grn. It is the largest sum from all regions of Ukraine. However, these volumes of financing are not sufficient.

The authors of the research analysis on the financing of transport infrastructure of the region made generalization and developed comparison characteristics of the sources of funding (table 2).

Table 2: Comparative description of sources of financing of transport infrastructure of the region

Financing option	Advantages	Disadvantages	Description of the option
Financing of the development of road infrastructure at the expense of budgetary and credit facilities (the current system)	No need to reimburse losses to private investors	The load on the state budget, risk of non-recovery of funds raised	Comparitively ineffective in modern conditions
Financing of the development of road infrastructure with the support of PPP	Reducing the burden on the state budget and improving the quality of road infrastructure	High risk that the profit will be lower than it is expected by private lnvestors because of low density of transportations and low solvency of the population	Not adapted to Ukrainian conditions
Financing of the development of road infrastructure through a combination of budget resources and other sources of funding (attracted funds from international financial organizations, loans with state guarantee and funds of investors, PPP)	Formation of stable sources of funding road infrastructure, implementation of PPP	High requirements to the regulatory and legal framework of regimentation of PPP and investors' rights protection	Efficient

Compiled by source [13,14]

Thus the development of transport infrastructure of the region needs funding by traditional and innovative sources of financing. It is also important to enhance cooperation and partnership between government and private investors, to implement the market mechanisms for financing, program and project financing on the basis of economic rationale and economic feasibility.

5. Conclusion

Transport system plays an important role in the functioning and developing of the region's economy, providing the dynamics and efficiency of the social and economic development of regions and the country. However, the modern transport system of Ukraine and its regions is characterized by a deep systemic crisis, since the infrastructure and level of organization of transportation does not meet needs of society and the European quality standards of transportation, which are constantly growing

It is difficult for public entities to deal with this issue. Underfunding of transport infrastructure and the growing gap between the growth of volume of transport and transport network development has become a global trend over the past few decades.

For the effective development of Ukrainian transport the systematic problems, which need comprehensive solutions at the state level, should be solved by the implementation of transport strategy.

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In order to maintain and develop the infrastructure of Kharkiv region it is necessary to define the strategic directions of the development of the region and to develop the plan to attract investments. That will positively influence on the economy of the region.

The authors made generalization and developed comparison characteristics of the sources of funding on the base of the researches on financing of transport infrastructure. The option of the financing the roads infrastructure has been considered as combination of budget resources and other sources of funding (funds from international financial organizations, state guarantee loans, funds of investors, PPP). This form of financing enables to form the stable sources of financing of road infrastructure and to implement such an important mechanism as public-private partnerships (PPP). Detailed elaboration of such a mechanism should be the subject of further research in this area.

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