

## FINANCIAL PROVISION OF CONDITIONS FOR THE DEVELOPMENT BY MULTIMODAL TRANSPORT INFRASTRUCTURE OF UKRAINE

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### **ABSTRACT**

*Transport, as the infrastructure of the national economy, is a specific branch of the economy of Ukraine, which participates in a single production and technological process of production of products of different sectors of the economy and directly affects the overall efficiency of production. The transport sector is always associated with the general development of productive forces and is considered one of the most important components of the infrastructure of the economy as a whole. Transport in our country is represented by the following types: rail, road, sea, river, air transport and pipeline. Performing the main function - providing the economic complex of the country in freight and passenger traffic, interact with each other and most areas of production. Considering transport as a system, and the whole mechanism of its development as an inseparable unity with the whole economy of the country, we can say that the transport infrastructure occupies a special place and creates a framework for the whole economy. In the whole transport system an important place is occupied by permanent devices that ensure its operation. The development of permanent devices of transport systems requires high-quality financial support and effective management.*

**Key words:** *transport infrastructure, economic activity, financial support, permanent devices of the transport system.*

### **INTRODUCTION**

Transport is important in economic development. The transport system unites all types of transport that are used to carry out the transportation process in the interests of the population, individual businesses, the economy at the national or international levels. Transport is serviced by permanent devices of transport systems, which should be considered as a complex of stationary (immobile) engineering transport structures that ensure the operation of rolling stock in the transport system through communication and interaction of different modes of transport, cargo operations, cargo operations, vehicle maintenance and passengers through terminals and a logistics network that provides comprehensive or partial transportation services. Given the instability of Ukraine's economy and the variability of legislation, the importance of research and analysis of the financial conditions for the development of permanent transport systems is growing.

Financial and economic conditions for the development of permanent devices of transport systems of Ukraine are in a satisfactory condition and require immediate regulation and comprehensive assistance and responsible partnership between the state, carriers and consumers of transport services. Thus, there is an urgent need to study the financial conditions of permanent devices of transport systems, which are to study the market of transport systems, the competitive position of the transport company and its financial and economic status.

## **1. THEORETICAL ASPECTS AND LEGAL REGULATION OF THE TRANSPORT SYSTEM**

In Ukraine, transport is one of the most important components of production infrastructure. The effective operation of the transport system is a necessary prerequisite for the stabilization and structural transformation of the economic system, the development of foreign economic activity, the increase of the country's GDP, the improvement of living standards, which in general will contribute to national security. Today, all modes of transport are interconnected and together form a single transport system.

Attention was paid to the scientific understanding of the category of transport system by well-known researchers on a national level, mainly Pavlyuk AV, who opines that the transport system is a strategically important factor in the development and competitiveness of the national economy and its national security [12], and Mitellayev KO, who in his works notes that the Transport System is a set of different modes of transport that are used to carry out the transportation process in the interests of the population, economy and state [9].

Agreeing with the opinion of scientists, we should note our own vision of the "Transport System" category, which we consider necessary to consider as a system of interconnected components involved in the transport process: infrastructure, vehicles, workers, and intended for transportation (transportation or relocation) structure.

The transport system continues the process of material production through the delivery of products to the place of final consumption. The development of the transport system affects the development of the economy and as a consumer of fuels and lubricants, metal, energy, rubber, labour. The transport system as a whole accounts for a significant part of fixed assets, industrial potential and service personnel. In the process of its operation, the transport system does not produce raw materials, finished products, but ensures production. The transport system contributes to the rational allocation of production potential, plays an important economic and defensive role, and promotes the economic integration of countries, the development of world economy and international trade. The transport system performs important socio-political functions, which are manifested in its ability to exchange material and cultural values at different territorial levels, and provides freight, household, cultural,

tourist and other movements, as well as significantly facilitates or even completely replaces human labour.

The transport system ensures the country's defensive capabilities through the transfer of troops, equipment, weapons, and it provides transportation to the rear and military production. According to Art. 21 of the Law of Ukraine «On Transport» the only transport system of Ukraine is: public transport (rail, sea, river, road and air, as well as urban electric transport, including the subway); industrial railway transport; departmental transport; pipeline transport; public roads. The unified transport system must meet the requirements of social production and national security, and have an extensive infrastructure to provide the full range of transport services, including for warehousing and technological preparation of goods.

Transport consists of three main elements:

- rolling stock that performs direct movement;
- permanent devices that provide training, movement, maintenance of rolling stock;
- transport management system [10, p. 4].

Permanent devices are fixed objects of transport that provide the most convenient operation of rolling stock in the transport system. They are a set of stationary (immobile) transport facilities together with the appropriate equipment (including loading and unloading mechanisms) and a service system. There are two physical components of permanent transport devices - the connection path and the terminal [10, p. 4]. The communication path is the environment in or through which the vehicle moves, performing its function. The present paper considers the essentials of the means of communication on different modes of transport, as well as their form of ownership under the current Ukrainian legislation.

The first place in terms of freight and passenger turnover among all modes of transport in Ukraine is held by the railway. It plays an important role in both domestic and long-distance interstate communications. The railway is a complex of engineering structures designed for trains to pass on it at a set speed. The trains' continuity and safety depend on the condition of the track. The railway itself is a rail track laid on the ground. According to Article 5 of the Law of Ukraine «On Railway Transport», the main railway lines of public use and technological structures placed on them, transmitting devices that are directly used to ensure the transportation process are state property subject to privatization [5]. Road transport carries out transportation of various freight and passengers mainly on short and average distances. Modern roads are a necessary condition for the development of motor transport. The road consists of engineering structures that provide service regardless of the season, day and weather conditions the possibility of continuous, safe and economical movement of cars with design loads and speeds, taking into account the restrictions imposed on cars [10].

The Law of Ukraine «On Motor Roads» establishes the following types of roads: public roads; streets and roads of cities and other settlements; departmental (technological) highways; highways in private areas [13].

Public roads are state-owned and not subject to privatization. Streets and roads in cities and other settlements belong to communal property, they are managed by local governments. Also not subject to privatization are sections of streets and roads of cities and other settlements that are combined with highways of state importance, and belong to the Unified Transport System of Ukraine.

Departmental (technological) highways are on-farm technological roads owned by legal entities or individuals. Highways in private territories are highways located in territories owned by legal entities (non-state) or individuals [13].

The waterway is a navigable part of rivers, lakes, reservoirs and artificial canals with hydraulic structures. The sea route is a space of seas and oceans, which includes straits and canals, as well as a set of means to ensure navigation safety.

Sea lanes are horizontal and rectilinear, so that ships do not go above rises when moving and take the shortest path between ports. The Law of Ukraine «On Privatization of State Property» establishes that water management canals of complex purpose, hydraulic structures, objects of navigation and hydrographic support of sea routes are not subject to privatization [6].

Airspace is a way of communication that does not require any artificial training or maintenance costs. It is more versatile than the oceans, as all parts of the world are equally accessible. In addition to take-off and landing sites, air transport is independent of the terrain. Unlike other routes, air transport requires less specific capital investment for the development of new routes. The main costs are associated with the construction of new airports, and the construction of one airport allows you to open not one but several new airlines to communicate with other airports. According to the Law of Ukraine «On Privatization of State Property», aerodromes and aerodrome facilities (runways, taxiways, platforms, landing systems, ground communications, navigation, surveillance, other elements of aerodromes that ensure flight safety) are not subject to privatization [6].

A unique type of transport is a pipeline, as it acts both on the road and rolling stock and includes traction vehicles located at a certain distance. Pipeline transport plays an important role in the movement of oil and petroleum products, natural gas. The path in pipeline transport is completely artificial. The pipeline is a line of welded and appropriately insulated pipes with an electrical protection device and communication lines. According to the Law of Ukraine «On Pipeline Transport», the main pipeline is a technological complex that works as a single system, and includes a separate pipeline with all facilities and structures associated with it in a single technological process, or several pipelines that carry transit, interstate, interregional deliveries of transportation products to consumers, or other pipelines designed and

constructed in accordance with state construction requirements for the main pipelines. Due to its economic and defensive importance, the main pipeline is state property [7].

Industrial pipelines (connected networks) include all other non-main pipelines within the production, as well as oil base, intra-industrial oil, gas and product pipelines, municipal gas distribution, water, heat, sewage, distribution pipelines, water supply systems, etc. According to the legislation of Ukraine, it is possible to change the form of ownership of industrial pipeline transport [7]. The totality of all routes in a given area and related permanent devices of different modes of transport make up a transport network.

## **2. FINANCIAL AND ECONOMIC CONDITIONS FOR THE DEVELOPMENT OF PERMANENT DEVICES BY UKRAINE'S TRANSPORT SYSTEMS**

The transport system plays an important role in the overall structure of the domestic economy and provides a combination of different areas of activity (supply of raw materials, production of goods, delivery of goods from producer to consumer, household services and employment), as shown in table 1.

**Table 1. The role of the transport sector in the structure of Ukraine's economy**

№	Criterion for analyzing the role of the industry	Transport share, %	Priorities for changing the role of transport for the economy of Ukraine
1.	GDP formation	On average 21%	Preservation of weight in the conditions of dynamic development of activity in the services sector (information and telecommunications, financial and insurance activity, etc.).
2.	Employment	On average, 11% plus employment in related fields	Stimulating self-employment and entrepreneurship in the field of road transport in order to improve the condition of rolling stock. Motivation of employment in socially significant jobs of passenger transportation
3.	Investments	On average, 15% of capital investment	Increasing the volume of capital investment in a very high degree of depreciation of fixed assets (over 90%). Encouraging foreign investment in innovative road transport development projects, especially in order to implement joint production projects with neighbouring countries.
4.	Household expenditures	On average 12%	Reducing the share of costs by increasing the level of income and financial accessibility to own vehicles.

*Source:* compiled by the author using [18]

According to expert estimates, the Ukrainian driver's fuel costs for his/her own consumption are up to 10% of the average annual income, i.e. in general, the item of transport costs, including road tax, is quite significant. Thus, the average Ukrainian family spends most of its income on food, housing and utilities and transportation.

Thus, in Ukraine, households spend 13.2% of the family budget on transport, and in Germany - 17%, while in Germany more money is spent on fleet maintenance, and in Ukraine on public transport [18].

Thus, the importance of the transport sector for the economy of Ukraine is significant, so it is advisable to pay considerable attention to the development of permanent devices of transport systems. According to Remzina NA, permanent devices of transport systems are a complex of stationary (immobile) engineering transport constructions providing work of a rolling stock in transport system by means of connections and interaction of various types of transport, performance of cargo works, economic work with cargoes, service of vehicles and passengers by means of terminals [14, p. 237]. Agreeing with the opinion above, we consider it necessary to clarify this concept, and to add to the permanent devices of transport systems a logistics network that provides comprehensive or partial transportation services.

Nowadays Ukraine exhibits disparities between the volumes of transport by certain modes of transport, which leads to the need to provide a mechanism for the development of permanent devices of transport systems in Ukraine in order to eliminate these shortcomings and create a basis for effective development and operation of permanent devices of transport systems.

The object of the mechanism of development of permanent devices of transport systems is the process of forming a system of economic and organizational relations between different entities when performing their activities at different levels in order to implement a set of innovative solutions for permanent devices of transport systems. The subject of the mechanism of development of permanent devices of transport systems are transport enterprises.

The main functions of the development mechanism of permanent devices of transport systems are:

1) organizational - the provision of existing transport services in the world at a level of quality that meets international standards; assistance in updating the technical level of enterprises of transport systems in Ukraine, taking into account modern market requirements; selection and substantiation of tools for organizing the development of permanent devices of transport systems, etc.;

2) economic - development of plans for financial support and implementation of the mechanism for the development of permanent devices of transport systems; development of labour resources and creation of additional jobs through stable development of permanent transport systems; increasing the technical potential of transport systems; introduction of innovative forms of labour organization and an effective system of remuneration of workers in the industry; introduction of a system of control and evaluation of efficiency and quality of provided transport services, etc.;

3) legal - the formation of a unified system of regulations governing the defining rights and responsibilities of entities in ensuring the development of permanent devices of transport systems, control over their practical application, etc. If necessary, it is possible to involve industry specialists for the formation of relevant regulations.

The development mechanism of permanent devices of transport systems is based on the interaction and interdependence of elements such as information and resources, as well as systems of constraints and tools.

The sequence of the cycle of development of permanent devices of transport systems includes the following stages:

1. Determining the motives and the necessary basis for the development of permanent devices of transport systems. The motives for the development of permanent devices of transport systems are: ensuring the competitiveness of permanent devices of transport systems; the possibility of increasing the potential of permanent devices of transport systems and their capacity; ensuring the accessibility of transportation and their potential increase within the international transport corridors; future increase of transport services competitiveness and decrease of their prime cost; increasing the capacity of permanent devices of transport systems and the efficiency of property use; increasing the level of competitiveness of Ukraine's transport systems on the world market; integration into multimodal transport systems for the organization of a reliable transport chain.

Financial support for permanent devices of transport systems gives them impetus and expands their capabilities, in particular attracting private investment for medium and long-term development; modern transport terminals with effective management methods are available; proper maintenance and use of permanent devices of transport systems; ensuring appropriate training with the introduction of a system of incentives; introduction of modern technologies for performing various works on permanent devices of transport systems; electronic document management, etc.

2. Determining the prerequisites for the development of permanent devices of transport systems, factor-criterion analysis.

3. Functional and structural maintenance of the process of development of permanent devices of transport systems, taking into account the socio-geographical features of the implementation territories.

4. Consistent institutionalization of the process of development of permanent devices of transport systems taking into account the mechanisms of resource provision.

5. Dissemination of a new form of development of permanent devices of transport systems throughout Ukraine.

6. Methodological support for the development of permanent devices of transport systems through the improvement of the legal framework, the development of public-private partnership and the provision of multimodal transportation.

7. Financial instruments to stimulate the development of permanent devices of transport systems. This direction is aimed at determining the optimal adaptation to the realities of modern financial instruments in order to ensure the development of permanent devices of transport systems. The implementation of these cycle stations is

based on the relationship and interdependence of the development process regulation (information matrix), material support of the process of development of permanent devices of transport systems (resource matrix), taking into account existing limits (matrix of constraints) and the formative organization of the permanent devices of transport systems.

An important function of the mechanism of development of permanent devices of transport systems is the economic one. After all, the economic and financial component of the conditions for the development of permanent devices of transport systems is quite important, especially in times of crisis and quarantine restrictions. Therefore, we consider it appropriate to analyze it in more depth [20-25].

The analysis of the capital investment by type of economic activity «Transport, warehousing, postal and courier activities» can be seen in table 2.

**Table 2. Capital investments by type of economic activity «Transport, warehousing, postal and courier activities» in 2017 - 2019 (UAH million)**

Means of transport	2017	2018	2019
Total:	448461,5	578726,4	623978,9
Including			
Transport, warehousing, postal and courier activities	37943,5	50078,3	43792,8
Among them:			
land and pipeline transport	22245,7	31005,7	24569,7
freight railway transport	11312,0	17690,3	11416,4
other passenger land transport	4072,9	5271,4	4355,0
freight road transport, provision of transportation services	4428,6	5819,6	5240,5
pipeline transport	2432,2	2224,4	3557,8
water transport	253,7	198,2	252,4
cargo sea transport	-	17,8	238,4
freight river transport	222,8	177,9	11,6
air transport	1302,5	1527,7	1767,9
passenger air transport	1138,4	1286,5	1324,7
cargo air transport and space transport	164,1	241,2	443,2

*Source:* compiled by the author using [16]

These statistics indicate an increase in total capital investment in 2019 compared to previous 2018 and 2017. But against this background, there is a decrease in capital investment in rail freight, passenger land transport, freight road transport, the provision of transportation services and a significant increase in capital investment in pipeline transport, freight maritime transport, passenger air transport and freight air transport and space transport . Undoubtedly, the reduction in the level of capital investment has a negative impact not only on the level of development of the transport sector, but also on the level of employment and GDP.

Financial and economic indicators for certain types of economic activity for 2017-2019 can be seen in table 3.

**Table 3. Financial and economic indicators for certain types of economic activity for 2017-2019**

Indexes	Years		
	2017	2018	2019
Financial result before taxation for certain types of economic activity (UAH million)			
Land and pipeline transport	-26504.1	-34503.7	-12585.3
Water transport	87.8	73.2	255.5
Air transport	-961.2	-1421.4	2744.0
Profitability of operating and all activities by individual types of economic activity (%)			
Land and pipeline transport	-8.2	-9.7	-2.3
Water transport	1.9	1.7	6.9
Air transport	-4.8	-2.6	3.3
Volume of sold products of transport, warehousing, postal and courier enterprises (UAH million), including:			
Land and pipeline transport	216967.4	247558.9	258590.2
Water transport	2695.4	3165.8	3572.9
Air transport	40415.0	50127.3	-
Expenditures on production of transport, warehousing, postal and courier enterprises (UAH million), including:			
Land and pipeline transport	154544.9	208146.9	237014.3
Water transport	2514.9	2486.8	2599.0
Air transport	22314.8	29471.1	41014.6

*Source:* compiled by the author using [16]

Thus, over the period under study there is an unprofitable activity of land and pipeline transport, and improvement of the financial result of water and air transport. Unfortunately, according to Table 3, operation profitability is negative in the sectors of land and pipeline transport, significantly improving the profitability of water and air transport, which indicates an increase in the economic efficiency of transport. But at the same time we see an increase in production costs (fuels and lubricants, spare parts, equipment for maintenance, maintenance and repair of transport), which with rational use and effective management in the future will increase profitability.

### **3. PROBLEMS OF FINANCIAL PROVISION OF CONDITIONS FOR THE DEVELOPMENT OF PERMANENT TRANSPORT SYSTEMS IN UKRAINE AND MEASURES TO IMPROVE THEM**

It can be argued that insufficient financial support, as well as the insufficient level of management measures causes many problems in the development of permanent transport systems, and not only in point of the financial and economic direction, namely:

- lack of an effective system for collecting and processing administrative data in the transport sector, and therefore an objective assessment of its condition and development prospects;

- imperfection of the system approach to the coordination of development and long-term planning of all types of transport, taking into account the socio-economic needs of the population, business, defence, taking into account the geopolitical interests of Ukraine;

- incompleteness of administrative reform, in particular the process of delimitation of functions of state regulation and control, including the formation of relevant state bodies of management, operational activities and functions of economic activity of transport enterprises;

- limited systems of control over the effectiveness of management decisions of transport enterprises, insufficient transparency of reporting and conduct of public authorities and economic entities of the public sector in the transport sector;

- lack of an effective system of communications and feedback between transport authorities, transport companies and users of transport services, which reduces the efficiency of transport management and the quality of transport and logistics services;

- lack of a system of criteria and indicators for assessing the quality of transport services;

- imperfect system of preventing the destruction of public roads, in particular dimensional and weight control of vehicles and the appropriate level of responsibility for exceeding the permitted parameters, and the permissible values of the axial loads of vehicles.

In this regard, in the process of managing permanent devices of transport systems, attention should be paid to addressing the following issues:

- optimizing the systems of collection, analysis and use of statistical data on the activities of transport enterprises;

- promoting the implementation of programs of executive bodies in the transport system;

- using the best world experience to ensure the development of permanent devices of transport systems, taking measures to improve the quality and reliability of transport and logistics services, considering foreign economic and regional relations of Ukraine and based on a comprehensive systematic approach to coordinating all modes of transport in the national transport network ;

- promoting the development of transport infrastructure in accordance with EU standards and regulations;

- increasing accountability and transparency in management decisions, through:

-- activity of independent supervisory boards at the enterprises of the state sector of economy, systems of management of resources of the enterprises, public monitoring and system of the reporting on activity and the received results;

- introduction of an open data system, electronic services and other measures to prevent and combat corruption;
  - simplification of administrative procedures for business through the introduction of e-government;
  - ensuring open access to public information;
  - strengthening the effective relationship between service providers and consumers, state and local authorities;
  - introduction of electronic services of administrative services in the transport sector;
  - implementation of effective measures to reduce the time of cargo handling and formalities by simplifying the administrative procedures during international transportation;
  - promoting the provision of uniform technological compatibility in the main directions of transportation and connections between modes of transport;
  - ensuring the definition of key indicators of the effectiveness of road management and monitoring systems for their implementation;
  - taking measures to introduce European standards for the design, development and maintenance of roads, improving pavement quality and the validity of the choice of its type, in particular by gradually restoring the operational characteristics of the road network;
  - promoting the creation of a competitive environment and a favourable business climate in the market for the provision of transport services, in particular the expansion of the list of services provided by the enterprises in the transport sector;
  - taking urgent measures for tariff regulation in the field of transportation by all modes of transport in accordance with the European experience;
- The measures above will allow for the following results:
- accurate vision of the real situation, the formation of the forecast of demand for transport services, the ability to predict the development of the transport industry on the basis of systematic analysis of information, and creating conditions for the presentation of information on the transport sector on the official Eurostat website;
  - delimitation of activities on infrastructure management, freight and passenger transportation;
  - creation of a transparent competitive environment in the market of transport services, in particular for passenger and freight operators;
  - implementation of equal rules of activity for all subjects of the transportation market and the mechanism of guarantee of equal access to the market of transport infrastructure services;
  - creation of competitive conditions for Ukrainian road hauliers on the European market of road transport services;

- achieving the level of labour productivity in the transport sector and creating new jobs;
- growth of the share of the transport industry in the formation of the gross domestic product of the country, reduction of the transport component in the price of goods and services;
- improving the financial results of the transport industry;
- ensuring the creation of passenger and freight and logistics infrastructure complexes as part of multimodal clusters with rail, road, air and water transport, in particular by building a system of multimodal transport and logistics clusters and logistics centers at borders, ports and airports, In 2025, Ukraine should earn a place in the top 50, and in 2030 in the top 20 of the world ranking of the logistics efficiency index (LPI of the World Bank);
- introduction of a flexible system of forming a competitive tariff and price policy, which will help attract transit cargo and reduce the cost of export-import of goods;
- ensuring the transparency of the process of determining the road carrier on a competitive basis for the implementation of passenger traffic;
- ensuring the creation of competitive conditions for contractors of road construction and repair works, maintenance, implementation of a system of independent quality control of their implementation;
- increasing the level of responsibility of road transport participants for the violation of dimensional and weight parameters of vehicles, and creating conditions that will ensure compliance with road transport participants of dimensional and weight parameters of vehicles, in particular the introduction of vehicle weight control while driving and introduction of electronic axle load control system in motion.

## **CONCLUSIONS**

These measures will contribute to the most effective development of permanent devices of transport systems, and further improve the provision of transport services, their level and quality. The state of Ukraine's economy depends on the development of permanent devices of transport systems. The construction of highways and roads will increase freight and passenger traffic through Ukraine, as the favourable geographical location greatly contributes to this. Thus, it is expected to increase revenues to the state budget, as well as the annual GDP.

The measures will help improve the financial situation of private transport carriers, increase their profitability and efficiency, as well as optimize the activities of transport departments and logistics structures.

In addition, a necessary condition for the development of the transport system is its scale (increase in turnover), profitability, efficiency and achievement of social effects, due to increased social guarantees for transport workers and additional comfort and insurance services for passengers.

Thus, the development of the motor transport industry in Ukraine is quite controversial. On the one hand, the industry is affected by numerous problems, which are basically reduced to a satisfactory condition of the rolling stock of road transport infrastructure. On the other hand, the road transport sector is characterized by sufficient importance in the structure of the economy, and a significant creation of employment opportunities. It is an important centre of investment and innovation. At the same time, domestic statistics limit the possibilities of a specific analysis of the importance of road transport in the economy of Ukraine.

Understanding the importance of the transport industry, it should be noted that only comprehensive strategic measures will allow to ensure full comprehensive development and increase the efficiency of the conditions of permanent devices of transport systems. Strategic measures should take into account the dynamics of macroeconomic, socio-economic and political processes, the state of the market of transport services on a national and global scale, without neglecting the national transport strategy and the concept of development of the transport and road complex.

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