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**LOW-ACTIVE SECTIONS
OF RAILWAY TRANSPORT
OF UKRAINE:
DIALECTICS, PROBLEMS
AND PROSPECTS
OF DEVELOPMENT**

Monography



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The monograph is devoted to the improvement of theoretical provisions and the development of practical recommendations for the development of inactive sections of railway transport of Ukraine in the service of passenger and freight flows.

Designed for graduate students, teachers and students of higher educational institutions and a wide range of managers and specialists of transport enterprises of Ukraine.

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INTRODUCTION

The efficiency of the national economy, economic growth, sustainability of territorial complexes and foreign economic activity are traditionally determined by the functioning of transport. On the one hand, it reflects the level of the national economy and its competitiveness, on the other - creates the conditions for long-term strategic ties and cooperation of all economic entities, regardless of ownership and industry affiliation.

In the context of railway transport reform, the issues of its effective functioning and the formation of a model of its sustainable socio-economic development are especially relevant.

However, due to a set of technological reasons, the problem of operation of inactive sections of the railways of Ukraine has affected.

Low-activity sections include stations and lines that are part of the network that is part of the Regional Branches of JSC "Ukrzaliznytsia". They are part of the property of this joint stock company.

Given the problem of functioning of inactive sections of railway transport in the context of reforming the industry, at present, we have studied the scientific works of domestic and foreign scientists who have dealt with this issue. As a result of the analysis of scientific sources on this issue and within the framework of the conducted research, further measures have

been developed to increase the efficiency of their work. After all, this is one of the most important tasks facing the management of railway transport today and needs an immediate solution [150].

Operation of inactive sections of Ukrainian railways, serving the population, enterprises located in the area of their attraction, brings JSC "Ukrzaliznytsia" quite significant losses and is accompanied by considerable organizational and managerial difficulties (maintenance and repair, staffing, traffic safety, etc.). Therefore, the main purpose of writing this monograph is to find ways to ensure the effective functioning of inactive sections of railway transport in terms of reforming the industry.

1. WORLD EXPERIENCE OF OPERATION OF LOW-TRAFFIC LINES OF RAILWAY TRANSPORT

1.1 Conditions of operation of low-activity sections of railway transport: foreign and domestic experience

Railway transport (RT) is the basis of the transport complex of Ukraine and is of great economic, social and international importance. Today, its share in the total turnover of all modes of transport (excluding pipeline) is 83.2%, and in the total passenger turnover - about 56%.

Today it faces complex and responsible tasks of combining the needs of the population and production in the provision of transport services, especially in inactive sections (IAS). JSC Ukrzaliznytsia incurs significant financial losses from their operation, so the share of MDD costs in total costs is about 40%, and the share of traffic does not exceed 20%. This causes considerable difficulties for the technical and economic potential of JSC "Ukrzaliznytsia". This is due to the fact that the volume of traffic here, as a rule, does not exceed three to five pairs of trains per day. But at the intermediate points of many such areas there is a full staff of all units, and the duty on them, as well as at busy stations, around the clock. Research has shown that the staff at the stations of these polling stations in such cases are engaged in the main work (train operation) less than half of the working time.

Improving the efficiency of freight and passenger traffic on low-activity sections and in order to reduce or completely eliminate their losses, today, is an extremely important production problem. Its solution requires theoretical generalization and development of modern approaches to the formation of technical and economic potential of inactive sections, taking into account their strategic development and positioning in the market of transport services.

Problems of formation and development of transport potential are in the center of attention of modern researchers. The work of many scientists is devoted to the study of the peculiarities of railway transport as a component of the country's transport infrastructure, including the IAS. Among them should be noted such Ukrainian and Russian economists as: I.M. Aksonov, Y. C. Bapash, I. S. Balaganskaya, E. M. Sych, A. I. Butenko, B.V. Burkinsky, O.O. Vasiliev, V.M. Gurnak, O.M. Gnenny, O.I. Zorina, G.D. Eitutic, Y.F. Kulaev, V.I. Kopytko, O.M. Kotlubay, M.I. Mishchenko, V.I. Pasichnyk, O.S. Proshkina, P.A. Smagliy, I.S. Starchenko, V.V. Zhikhareva, M.E. Yushkov and others.

However, given the obvious scientific interest in improving the efficiency of railway transport and the wide range of research conducted in this area, the problem of ensuring the cost-effective operation of low-level sections of railway transport requires scientific and theoretical justification and practical solution.

Taking into account the problem of functioning of inactive sections of railway transport in modern conditions, we studied the scientific works of domestic and foreign scientists who have dealt with this issue. As a result of the analysis, measures have been developed to increase the efficiency of their work. After all, this is one of the most important tasks facing the management of railway transport today and needs an immediate solution.

The constant reduction in the volume of traffic on rail transport leads to a gradual increase in inactive lines [76].

Problems related to determining the directions of improving the efficiency of low-activity sections of railways are covered in the works of Y. S. Barash, Zorina O.I., Smagliy P.A., Kulaeva Y. V., Mishchenko M.I., Eitutisa D. R., Pasichnyk V.I. and others.

Professor Kulaev Y.F. in his research identified the following current and future problems in the operation of low-efficiency lines and sections [92]:

- organization of railway rolling stock movement on main and dead-end sections according to the developed and proposed optimal methods;
- using the actual data that guide the development of railway connections and traffic volumes and really reflect the production potential of our country and the demographic situation, proposed to make a forecast of the dynamics of

transportation by railways of Ukraine with the involvement of leading experts and research institutions;

- insisted on the improvement of normative legal acts, the purpose of which is to harmonize the interaction of the main participants - railway transport, local authorities and communities;

- immediate scientific solution of the economic issue regarding the further functioning of individual railways, taking into account the possibility of closing or changing the form of ownership of the economic entity;

- taking into account the need to optimize the cost of operation of sites, proposed the development of an understandable mechanism for accounting for the cost of operational activities, based on objective data; виходячи з досвіду експлуатації малодіяльних ділянок та їх потенційну збитковість пропонував розробити адресну дотаційну державну систему;

- based on the objective operating conditions of low-activity sections, characterized by significantly worn (in physical and moral sense) technical means and mechanisms, it is proposed to develop a separate rolling stock that best meets the requirements of specific operation, which allowed not only to meet the need for it. in the conditions of inactive sections and also to provide domestic railway industrial enterprises with volumes of works;

– a set of technical, technological and economic measures is proposed for development in order to thoroughly reduce the consumption of material, labor, technical and economic resources.

Professor Zorina O.I. devoted many scientific works to the study of international experience in the operation of low-activity sections and the application of organizational and economic methods to ensure the efficiency of use of areas with small volumes of traffic, the introduction of microprocessor centralization.

The author Zorina IO proposed for implementation the system of MSDC "CASCADE" on inactive sections of railway transport in order to increase the efficiency of freight and passenger traffic management due to [68, 69]:

– improvement of the controlling system in relation to the objects of operational activity with the help of diagnostic models in real dimension;

– management of operational activity of rolling stock by means of automation that will lead to decrease in number of administrative operations;

– control of line station equipment by means of telemetry, which reduces the influence of the human factor on the operational process.

Professor Eitutis G.O. in his scientific works considered the peculiarities of economic activity of dead-end railway lines on the example of the Regional Branch of the South-Western

Railway, the order of parameterization of their activities and ways to solve problems of inactive lines based on categorization by appropriate criteria .

Professor Pasichnyk V.I. [132, 133], expressed the opinion on the need to rank inactive areas on the basis of integrated and complex indicators, which will determine their role and degree of importance in the region.

The works of Professor Barash Y. S. and Smaglyi P.A. are devoted to the problems of inefficient railway tracks and methods of their solution. Scientists have analyzed the world experience in addressing such issues and suggested possible ways to improve the efficiency of inefficient lines. The authors are inclined to believe that inactive, inefficient lines should be closed, which will reduce costs on the railway [7, 8].

Paying attention to the existing problems of functioning of inactive sections, the draft Law of Ukraine: "On Railway Transport" addresses some issues that should improve their financial condition.

Separately, this applies to the need to ensure their functioning by local governments or cargo owners who are regular users of these sites [76, 86, 87]. However, in order to address certain provisions of the Law of Ukraine, it is necessary to introduce a clear gradation that will clearly identify inactive sections with different traffic, both freight and passenger traffic, which really require the implementation of measures regulated by law [64].

This is especially true of the Lviv Railway. There is a very pronounced imbalance in the size of passenger and freight traffic. According to the indicator, the number of trains in the freight direction of the section is clearly inactive. But the size of passenger traffic is close to the size of the operational activities of the main sections.

– The management of JSC "Ukrzaliznytsia" offers the heads of directorates with representatives of the executive power and local governments to jointly decide the fate of inactive stations and sections, while proposing the following obvious ways and solutions [37]:

– With the help of the system: "Transparent" and tender procedures, the fixed assets of JSC "Ukrzaliznytsia", which belong to the unprofitable category, are proposed to be transferred to the ownership of enterprises - consumers of transport products;

– It is also proposed to involve potential cargo owners in the implementation of the compensation mechanism for the maintenance of station farms;

– Compensation of negative results of operational activity at stations by budgets of local communities;

In a special case, when the possibilities for reviving the operation of the station are exhausted, it is proposed to close the connecting section and the station and remove it from the balance of JSC Ukrzaliznytsia.

Based on the dynamics of operational activity in freight and passenger traffic, the issue of improving the efficiency of lightly loaded sections will be more than a decade.

That is why, considering the transitional stage of railway transport development, the active phase of the reform program, we propose to separate the Program "Economics, organization and management of inactive lines of railways of Ukraine" in a special direction of the State scientific and institutional activity. Russian scientists, such as Balaganskaya O.S. [6], Vasiliev O.O. [18], Proshkina O.S. [155], Starchenko I.I. [187] and others.

Thus, Balaganskaya O.S. and Starchenko I.I. [6, 187] proposed similar mechanisms for the development of inactive lines on the Russian railways. They offer the closure of lines, conservation, optimization of service technology - modernization or reduction of costs for their maintenance, transfer to the subjects of the Russian Federation, its sale or lease.

Starchenko I.I. offers the most cardinal measures to increase the efficiency of inactive lines in his work [187]. Others are socially significant, connecting remote cities and towns with large cities and centers, thus solving the problem of transport security. In addition, their operation can solve many problems of territorial development, stimulate the development of production and employment growth.

All this forces local authorities to have a negative attitude to the closure of inactive lines and sections. It should be borne in mind that the closure of inactive lines will lead to the loss of

cargo owners and passengers, and hence reduce the competitiveness of railways, compared with other modes of transport [187, 248].

O.S. Balaganskaya in [6] proposes instead of closing low-capacity lines to carry out their conservation, ie to switch traffic control to dispatch centralization and to the road traffic control center.

At the same time, there will be no staff at the stations, but only maintenance of infrastructure devices. Given the prospect of growth and revitalization of industrial enterprises, these stations can be included in the work at any time. Today, conservation can save on operating costs. And to ensure the social security of workers released during the decommissioning of inactive lines, they are involved in the conservation and maintenance of technical means.

However, if the closure or conservation of a certain inactive line is not possible, then to reduce the cost of maintaining the lines is optimizing the technology of their maintenance. OS Balaganskaya offers two possible development options to reduce current operating costs:

1. Modernization of the line (site) by technical re-equipment and reconstruction:

- development of remote control systems for arrow transfer and signal opening;

- introduction of dispatch centralization to obtain complete and reliable information about the movement of trains and their arrival in full;

- use of rail buses for traffic in suburban areas;
- combined use of different modes of transport, etc. [6].

2. Cost reduction for certain cost items:

cost reduction is achieved by bringing in line with the volume of transportation of technical means and the contingent of employees. To this end, inactive stations are transferred to work during the day, inactive areas are transferred to the category of non-public tracks, the number of shunting locomotives is reduced. In these cases, organize the movement of freight trains on a fixed schedule, which reduces the number of locomotive crews. With this technology, it becomes impractical to keep on duty at the station at all stations of the site, and at those stations where the work of crossing trains, duty at the station is set during the operation of the export locomotive.

In addition, the optimization of inactive lines is achieved by combining professions in the production unit. Thus, the employee of the locomotive crew must perform the duties of a car inspector, train assembler and others [6].

O.O.Vasiliev in [18] paid great attention to the sale or lease of inactive lines. The author considered inactive lines to be sold to interested organizations or leased to a joint venture or outsourced. Such measures are applied by attracting private funds to improve the condition of the railway tracks, attract new users and increase their volume, increase revenues by obtaining the selling price and rent, as well as reducing the cost of maintaining the railway tracks.

O.S. Proshkina in her dissertation [155] considered the development of conceptual foundations for the modernization of inactive railways, taking into account the interests not only of the transport corporation but also society (social aspect), bearing in mind the predominant use of incapacity for passenger services.

The directions of further activity of OS Proshkin are specified. outlined in four main strategies:

Strategy I. Modernization of the line (site) by technical re-equipment and reconstruction, which will reduce current operating costs and make the use of the line profitable.

Strategy II. - Privatization of the line (site) with the preservation of its production profile (or without preservation) and subsequent operation by the forces and means of the new owner.

Under the variant of this strategy it is possible to consider lease of inactive railway lines (concession), other forms of public-private partnership (joint ventures, outsourcing).

Strategy III. Conservation of the line.

Strategy IV. Closure of the line with subsequent removal of elements of the upper structure of the track, houses, buildings, and their disposal.

1.2. Research of management of transport infrastructure in foreign countries

Analysis of foreign trends in the development of railway transport shows that the existence of inactive areas on foreign

railways is also an inevitable process, so the problem of improving the efficiency of their use is very important.

Ways to increase the efficiency of inactive lines used on foreign railways are presented in table. 1.6.

Table 1.6

Directions for improving the efficiency of
inactive lines on the railways of other countries

Countries	Ways to increase the efficiency of inactive lines
USA	Reorganization of transportation as a program of state support; alienation of plots, closure, or lease.
Mexica	Concession approach to the schedule lines of inactive sections
Canada	Transfer to the management of private operators operation of unprofitable lines
Great Britain	Intensification of operational activities, including due to repair works to improve the infrastructure, communication systems and SCB
Germany	Through the introduction of simplified methods of operation; flexible tariffing system, development and implementation of special types of rolling stock; in special situations - switching cargo - passenger traffic to other modes of transport
Netherlands	Alienation by competition to selected operators or cargo owners, development of the intermodal sector
Finland	Use of special technical means of transportation, reduction of personnel

* Systematized by the authors for [76, 111, 232, 240, 259, 261, 263, 265]

Each of the considered methods of operation of inactive sections of railway transport has its advantages and disadvantages, but to some extent allows to compensate for the costs incurred by the railways.

All the above-mentioned methods of site operation are not universal and any inactive line requires an individual approach and a specific decision on it, which will depend on a number of factors.

Based on the research, in our opinion, it is advisable to develop a mechanism for making management decisions on the choice of operation of each specific inactive site, taking into account specially developed economic criteria.

The transport infrastructure of foreign countries has a significant impact on the transport system of any country.

Rail transport in EU member states has fallen by a total of 10% over the last decade. The main reason for the decline was the reduction of heavy industry [242-253].

In the rapidly growing passenger market, the share of rail transport decreased from 11% in 1991 to 5% in 2000 [254, 259].

This was mainly due to the increase in the number of personal road transport and increase the competitiveness of road transport in general [35, 180]. However, in absolute terms, passenger traffic increased by more than 25%.

During the same period, revenues per unit of traffic have not changed. As a result, cost recovery decreased from an average of 73% to 52%. Subsidies were not sufficiently increased and the financial situation of the railways weakened. The capital-to-debt ratio of the EU railways as a whole in 1991 was 1.29, which is much higher than for a commercial company [259]. Even after subsidies reached 40% of costs, the EU's railways were generally unprofitable.

It is in this context that rising costs and deteriorating financial condition of the EU railway have begun an active phase of reform [240].

There are good reasons (cost reduction, asset longevity, current costs, capital intensity, network benefits and common costs) to improve the efficiency and competitiveness of railway services [180, 259].

The economic characteristics of the railway industry as an element of natural monopoly mean that EU governments must maintain a regulatory role outside general antitrust regulation [233]. Indeed, this does not mean that the role of state power ceases when the object of management becomes private property [60]. In order to survive, grow and return on investment, railways need predictable financial conditions.

Effective rail transport management also requires the freedom to make commercial decisions that must adapt to changing markets. These are the basic conditions that railway regulators must meet if they are to be successful in the long run [254].

Great savings can be achieved by creating a single regulatory framework that will manage the optimization of investment in the development of the railway network [159, 233].

At the same time, greater transparency and accountability are needed to attract investment in the railway system. Investment is an important tool for ensuring the transfer of goods from roads to railways to reduce the environmental impact of

transport, as the main stated goal of transport policy in many European countries [209, 228, 258].

Rail transport is best suited for transporting large and regular goods over long distances.

Although the market for this type of cargo has declined significantly over the past 60 years. The share of rail transport in the total freight market in most countries has decreased [228].

Changes in the overall structure of the freight market, which tends to reduce the weight of freight units, increased requirements for high speed and reliability of delivery have contributed to the development of road transport in most countries [228, 241]. Large investments in road infrastructure have also benefited road transport.

In many EU countries, these trends have been exacerbated by inefficiencies in the railway sector. Often outdated organization, low productivity, poor marketing and cumbersome administrative procedures have led to low efficiency [245]. In addition, public authorities have introduced non-profit targets without adequate compensation.

In countries with economies in transition (especially Bulgaria, Denmark, Estonia, Latvia, Lithuania, Hungary, Slovenia [234, 235, 236, 237, 238, 239, 241]) such rigidities were found as a result of the collapse of heavy production, which relied solely on on rail transport. The decline in freight traffic in these countries may continue for much longer than the period of general industrial restructuring, unless the railway sector is also reformed [228].

When considering the appropriate regulatory framework for railways, it is useful to consider each transport market separately. Different transportation markets raise different regulatory issues, as follows [154]:

Intensive transportation of bulk cargo (eg coal) [228]. The railways have some monopoly power in these markets.

Less intensive transportation of bulk cargo and general cargo. There is intense competition from road transport in these markets. This reduces the need for regulatory intervention and makes competition in the railway market less important.

But it can act as an incentive to increase the efficiency of innovation in order to reduce the cost of transportation [180].

Transportation of containers. Cargo work is concentrated in ports. Due to economies of scale, railways have a technological advantage, but there is strong competition in road transport, reducing the need for regulatory intervention [180].

High quality goods. Where there are large volumes of traffic on fixed routes, rail transport has proved to be a successful competitor with road hauliers, even for clear delivery times. Intermodal competition intensively reduces the need for regulatory intervention [180].

Interstate movement. International or interstate connections through different regulatory jurisdictions and through connections of different railway companies increase the complexity of regulatory issues related to the compatibility of regulatory regimes and barriers to market access, as well as technical issues related to interaction. Although discrimination

based on economic characteristics can improve overall well-being, discrimination based on nationality and geographical origin will seriously undermine the efficiency and competitiveness of the industry [35, 233].

These differences provide a basis for focusing on regulatory intervention and the feasibility of reforming rail transport in different countries [240].

Rail passenger transport can complicate regulatory issues for freight in two main ways. First, cross-subsidization of passenger transport in Central and Eastern Europe, Russia, and the Newly Independent States.

Thus, existing operators bear a burden that increases the cost of their freight operations. In the case of open access (liberalization), operators do not suffer such a burden, giving them an unfair advantage in this regard.

The elimination of cross-subsidies is partly a political decision.

Secondly, passenger traffic can have a negative impact on freight traffic, as passenger trains usually have priority in track distribution. This is a serious problem in the busy part of European networks, especially around large urban centers [155, 258].

In 1991, the Commission of the European Communities issued Directive 91/440 / EEC on the development of railway tracks [186]. This remains the most important measure to increase the competitiveness of rail transport [35].

To paraphrase the provisions of the directive, its principles and objectives were as follows:

- to promote the integration of the Community transport sector, which is an essential element of each State's internal market;
- to make the railway network system efficient and competitive with other modes of transport [180].

Therefore, the main task was to make the railway system competitive with other modes of transport through integration and harmonization [179]. Creating competition online through open access has become a means to this end. Integration here acts as cooperation between railway undertakings for the provision of international services, rather than competition between them, which is considered the main means of increasing the competitiveness of EU rail transport [180].

The directive covers four areas [186]:

- financial strengthening, in order to create a strong financial basis for railway enterprises;
- management independence so that railway undertakings operate as commercial organizations, independent of the government;
- separating infrastructure from operations, at least in accounting [234];
- access to railway infrastructure, which should be open to railway undertakings involved in international transport,

combined transport and international groups of national railway undertakings [234].

Although the directive has been transposed into national law in all Member States, progress in implementation has initially been difficult in many countries, in particular to ensure access for new operators. On the other hand, some countries have enacted laws that not only transpose directives but go far beyond their requirements. [186].

Two relevant directives were adopted in 1995:

- Directive 95/18 on the licensing of railway undertakings;

- Directive 95/19 on the allocation of railway infrastructure capacity and the levying of charges (see the section on infrastructure pricing for rail freight in the EU Member States) [228, 250].

They have also been enacted in most countries.

In 1992, the White Paper on a Common Transport Policy was published. The policy aims to eliminate the long-term reduction in market share in rail transport to help achieve a broader goal of sustainable mobility [254].

Some of the concepts behind the directives were further developed in the EU White Paper [254].

A document entitled "Strategy for the Revival of Public Railways", published in 1996, which revealed a possible scenario in the event that the railways have not passed the reform stage [254].

The paper considers the problems of railways that need immediate solution.

The work identifies the need for:

- strengthen the financial stability of the railways and apply state aid rules to ensure the operation of the railways as commercial organizations;

- use more market forces and gradually introduce access rights;

- use contracts to replace non-targeted subsidies with public services;

- integrate national systems through interaction and technical harmonization;

- improve the management of social and labor aspects of reforms [151, 152].

There has been some coexistence between the White Paper and Directive 91/440, but the Directive does not address all the issues raised in the White Paper, such as subsidies, compatibility and the social aspects of reforms [254]. Interoperability is closely linked to the open access provisions of Directive 91/440, as different technical standards and rules of use are an obstacle to the development of rail transport in Europe [254].

Austria is the country of the European Community that has implemented the basic principles of railway transport restructuring the most among other countries. Austrian railways have perfectly adhered to the basic principles of reform [183, 251, 356].

The main characteristic of the modern international railway transport market is a high degree of liberalization of access to infrastructure [257]. Therefore, Austrian railways operate more outside the country, as evidenced by statistics - domestic rail services are a quarter of Austria's total freight turnover [257].

The technical means and infrastructure facilities on Europe's railways are perfectly compatible. Hence the high level of external traffic!

The length of Austrian railways is almost five times shorter than the tracks of Ukraine [250, 257]. There is fierce competition from road transport, which formed the basis for the implementation of restructuring processes, which is why there is a negative dynamics of the length of the railways [257].

This is the main deterrent that, despite the development of freight turnover in Europe, did not allow the proportional development of rail transport [257].

The second reason that generated the need to reform the railway transport, improve its competitiveness, reduce the volume of the freight unit transferred from the freight owner to the carrier. If earlier trains were formed for the transportation of bulk cargo, the trend that began in the second half of the 60's revealed an increase in demand for the so-called differentiated cargo - small consignments of different cargo nomenclature [251].

And here is the economic territory of road transport.

The implementation of such a concept on rail transport clearly led to an overestimation of the cost of transportation, which made the tariff uncompetitive.

Taking into account the struggle for the consumer in the European transport market, innovative solutions were increasingly introduced, which then became a necessity for each participant [254].

The consequence of such actions for railway transport was work "at the border", which is characterized by extremely low profitability, and in some cases the cost was even higher than the tariff, despite the budget subsidy, which decreased every year.

All these actions prompted the need for immediate action, first, to stabilize the deteriorating financial situation; secondly, the application of adaptive measures that would allow rail transport to better integrate into the new economic conditions [112, 179, 257].

The new organizational structure is based on the need to implement three ICs (strategic competencies).

The first IC is aimed at cutting off all the excess, which was a heavy economic burden for rail transport and was to implement actions to reduce.

The reduction allowed management to focus on the most promising areas and facilities. Their support was supported by additional working capital released from the reduction.

There were also significant savings from the loss of the need to pre-finance unprofitable activities, or the maintenance of

facilities that have not been used for a long time for their intended purpose [179, 257].

The basis for the implementation of the second IC was provided by marketing research, which lasted a long time and revealed an objective picture of the market position of railway transport [233]. Several market niches have been found for the realization of railway potential.

Harmonization of European transport legislation and the implementation of market research have combined the potential of railway companies in different European countries [186].

The direction of action is the provision of logistics services. As a result, several dozen companies were acquired, the scope of which is the provision of freight forwarding services [29].

The third SC is a consistent direction of the first two. A large number of railway transport campaigns required centralized management, which is why a combination of campaigns in the formation of Schem-Freight was chosen as a growth strategy. Consecutive implementation of the three ICs gave an indisputable positive result, which manifested itself in a monthly increase in freight turnover by 0.17%. But the global economic crisis has halted positive growth.

Almost the same situation is typical for the passenger segment of railway transport. Extremely competitive pressure not only by road, river, but also by air (low-cost airline, budget airlines). But the indisputable advantages of railway transport (reliability, safety, comfort, regularity, independence from

natural and climatic factors) lead to an increase in demand from the population [148, 246, 249].

As well as in the freight sector, in the passenger sector three SC are realized. The first priority was to set quality standards for customer service. This would be impossible without a thorough overhaul of fixed assets and a radical overhaul of existing ones.

The century of information technology has led to the need to enable customers of railway transport to enjoy all the benefits of modern (digital) technology. Ordering tickets, introducing a single fare that allows you to use not only rail but also public transport in a single form, continuous use of Wi-Fi, regardless of location, getting all the necessary information about directions, intensity, fare and more - the main idea implementation of the second SC [36].

The third IC is based on the understanding of the priority of meeting the needs of the passenger. That is why it was decided to combine the efforts of carriers of different modes of transport for the fullest satisfaction of customers who from the beginning of planning their trip were able to buy a single ticket for intermodal transport, regardless of modes of transport that served a particular section of the passenger route..

Belgium's rail transport - is the oldest and most extensive in Europe. Large specific length (100 m per 100 km of track), total length of 3.4 thousand km [260]. Since the mid-1990s, the National Union of Belgian Railways (NOBZ) has appointed privatization and reform.

As a result of the implementation of the strategy of reforming the public sector railway is divided into the separation of enterprises. Each of them has its own accounts, fixed assets, production capacity and specialized areas of action: track, locomotive, repair, passenger, freight, etc. [179, 260].

To date, most of the NOBZ reform program has been implemented, but not stopped because there is a constant improvement of European transport legislation in the direction of access liberalization, technical, legal, technological, economic harmonization. The management of the Belgian Railways seeks to maintain a reliable connection with innovations and adequately implement them in professional activities [186].

Long-term reform efforts have led to a reduction in the number of employees, increased productivity, and a conceptual change in the organizational structure of management, increasing the number of enterprises in a single sphere of influence [260].

The Czech Railways (CZ) were formed in 1993 after the break-up of Czechoslovakia. ChZ is a state enterprise and 100% belongs to the state. Railway infrastructure is currently state-owned. The emergency works under the supervision of the Ministry of Transport and Communications. The Chairman of the Board is the Minister of Railway Transport.

Like other Central and Eastern European countries, traffic has fallen by more than 52% since the fall of communism in 1989. Each year, ChZ transports about 98 million tons of cargo,

which is 48% of the freight market [236]. Traffic is evenly distributed between domestic and international traffic [236].

It is difficult for rail transport to compete with road transport due to the small volume of total traffic. Road carriers have reduced the transportation tariff too much [206, 209].

There is a clear trend of price discrimination.

Today, ChZ employs about 80,000 people, compared to 150,000 in 1989. But traffic has decreased much more. Productivity has also declined.

ChZ annually receives a profit from cargo operations of about 52 million euros (in comparable prices).

However, losses from passenger traffic are offset from freight. Every year the losses are more noticeable.

In total, ChZ has debts of 580 million euros. As a result, ChZ lacks the funds to invest [236]. About 53% of the car fleet does not meet RIV (UIC) standards.

Despite financial difficulties, the Czech Republic has invested heavily in the development of high-speed traffic, especially in the areas of international transport corridors (about 324 million euros) [236]. Most of the investments were financed by loans, mainly from state-guaranteed loans from the EBRD. Some investments were funded by grants from the EU Phare.

Under the 1994 Railway Transportation Act, the CZ was also reorganized to support open access. Transformed into two divisions, one - for railway routes (infrastructure) and for business operations [179, 257].

There is a separate internal accounting for each unit.

In November 1999, an amendment to the Law on Railway Transportation was adopted to determine the regime of compensation for the performance of public service obligations in the field of passenger service. This should improve the financial condition of the emergency. The new law on the transformation of the Czech Republic is being considered by the parliament. ChZ must be transformed into a joint stock company, which will initially be 100% owned by the Government [60].

This will make Czech Railways more autonomous and make it easier to set up joint ventures with private companies in areas such as freight forwarding.

The government provides open access under the following provisions:

- creation of "Drazni Urad" (railway authority), an independent state branch, to regulate access, granting licenses to operators who meet the conditions of professional competence and concessions for the operation of a specific section of the route, which provides for the availability of capacity and carrying capacity;
- the requirement for the infrastructure manager to provide access to authorized carriers as described above [236];
- provisions that operators have the right to apply to the railway authority to provide a thread of the schedule.

The freight market is open to all external freight operators. External operators must obtain a license from the Drazni Urad, which inspects carriers for compliance with regulations and performs vehicle approval specifications. [236]

The Czech Railways cannot prevent competition from companies that have their own equipment, terminals and depots [236]. There are now about 42 external operators. The largest are OKD Shipping Island. External operators have their own wagons, locomotives, transshipment equipment and depots, initially using special private lines connected to the Czech Railways. Initially, they worked mainly on short shoulders (about 20 km), but over time, the turning distance began to increase.

The Czech Railways has made rapid progress in the development of open access. The government also plans to adopt legislation on public service obligations in the near future, which should reduce the level of cross-subsidization of passenger services. This will place the emergency in the freight business in a better position to compete with open access operators [236, 257].

France. The railway companies that developed the French railway network in the nineteenth century were traditionally created or formed into groups with state aid. Further consolidation meant that by 1865 there were only six large companies left and five in 1930. These networks experienced great financial difficulties and were nationalized in 1939, when the French National Railway Company, the Societe Nationale

des Chemins de Fer (SNCF), was formed. Officially, the state owned 51 percent of SNCF's capital and the former railway companies the rest. In practice, having survived bankruptcy only through government intervention, the latter never performed their duties as shareholders. [268].

Under the French Inland Transport Framework Law of 30 December 1982, SNCF became a non-governmental organization, a public sector company operating on commercial lines [268].

SNCF receives financial contributions from the state in relation to public service obligations imposed on it as a result of the role of rail transport in meeting access rights to transport services and promoting energy conservation and security of energy supply [257].

These mechanisms explain the strong links that exist between the SNCF and the state.

The advantage of this agreement is that the operator benefits from a very high credit rating on the financial markets [257].

Just before the restructuring in 1997, SNCF was considered a technically very competent carrier, ensuring the development of safe transport and a satisfactory level of service. On the other hand, it was recognized that it has difficulties in managing operational and infrastructure costs and is considered insufficiently commercial [268].

Due to structural economic changes that contributed to the development of road transport [207] in the passenger and freight

sectors and in the absence of sufficient productivity, the steady loss of market share in the railways was the dominant trend in the second half of this century across Europe [268]. The trend is more common in other European countries than in France, especially for cargo.

Even important technical advances, such as high-speed passenger trains (TGVs) since the early 1980s or the development of combined freight transport, have failed to protect against a general downturn. Recent trends are as follows:

- passenger traffic increased by only 23% for urban and suburban traffic and stagnation on long-distance routes, while passenger traffic increased by 58% [155];
- freight transport decreased by 45%, while freight traffic increased by more than 26%. The rail service segment decreased from a market share of 28% to 17% [207].

Reform of French rail transport, aimed at achieving four goals [268]:

- creating conditions for sustainable restoration of railway transport;
- search for effective solutions to financial problems of the industry;
- clarification of the role of each of the main operators involved in the operation of railway transport and the introduction of a system that meets the requirements of Directive 91/440 on the development of railways, Directive 95/18 on

licensing of railway undertakings and Directive 95/19 on charging for railway infrastructure [268];

- preparation for decentralization of regional passenger traffic.

Organizational and financial responsibilities for regional passenger transport will lead to a profound transformation of rail transport in France and should ensure its restoration in the context of redistribution of segments between rail and road transport and the promotion of sustainable development policies [179, 268].

Most **German railways** were built in the 19th century, some by private participants, some by the state [261,262].

- The nationalization of the railways took place in 1921 and 1925, when the national railway was established.

- About 45% of freight traffic is cross-border. Due to their position, German railways were initially important for transit between east and west.

- After the partition of the country after World War II, the railways in two parts of Germany were administrations, but operated in different environments:

- in West Germany, the Deutsche Bundesbahn faced a premature decline in heavy industry and increased competition from road transport, although this was tightly regulated to protect the railways [262];

- in East Germany, the Deutsche Reichsbahn continued to serve heavy industry longer and faced less competition.

Reunification means that Germany now has the largest railway system in Western Europe (42,000 km, compared to 33,000 km in France, the second longest). There are also many small companies, seven of which are freight companies.

Passenger services, as a rule, are given priority in the distribution of the route [262].

As in France, rail traffic in the former West Germany peaked in 1970. But by 1989, rail had experienced an absolute decline and a relative decline of a third. To date, freight traffic in West Germany has fallen by another 19%. [262].

In the former East Germany, the railways experienced a much faster decline. This was mainly due to lower industrial production.

Railway transport reform took place in the context of the trend towards deregulation in Germany [261].

A special problem was due to the absorption of the German Reichsbahn:

- in 1991, the Deutsche Reichsbahn had almost the same number of staff as the Deutsche Bundesbahn (225,000 compared to 239,000), although the network was almost half as short [261];

- its rolling stock was outdated and the network was in poor condition.

The recommendations of the Government Commission were as follows:

- complete separation of the railways from the federal government;
- removal of any national economic obligations from the railways;
- financial restructuring to ensure the viability of the business;
- separation of accounts for infrastructure [234];
- introduction of competition in railway transport (beyond the requirements of 91/440) [261].

These commissions were followed by five bills, including the restructuring of the railway, the Act on the Establishment of the German Railway Joint Stock Company and the General Railway Act, as well as the implementation of the reform process [78].

To ensure the independence of railway management [262]:

- The Deutsche Bundesbahn and Deutsche Reichsbahn were merged in 1993 to form the BEV, the Federal Railway Authority (transitional authority);
- Deutsche Bahn AG (Deutsche Bahn AG) (DBAG - German Railway Leasing Company) was established in 1994 to take over all commercial activities of the railways - all the necessary assets were transferred for this purpose from BEV to DBAG [262];
- the regulatory agency Eisenbahn Bundesamt (Federal Railway Office) was established;

- BEV retains liabilities, such as surplus staff, ECU 37 billion in debt;

- rates for the carriage of goods are no longer subject to state approval.

Under the new system, the Eisenbahn Bundesamt, a subsidiary body of the Federal Ministry of Transport, is responsible for [261, 262]:

- ensuring non-discriminatory access to the railway;
- technical supervision and approval of all railway companies operating in Germany, including those registered in other countries;

- preparation and implementation of federal government financing agreements for investments in railway infrastructure [261].

The railways are still subject to competition law, including control of the Federal Cartel [262].

Together with the DBAG head office, four separate divisions were created: infrastructure, freight, local passenger transport and trunk passenger transport (a fifth was created later and related to the maintenance of passenger stations) [262]. These units create separate accounts. This provides a basis for the transparency of infrastructure access charges that meet the requirements of Directive 91/440.

The German Rail Transport Act provides for non-discriminatory open access to the railway network for [262]:

- all railway undertakings registered in Germany;

- international groups and railway operators wishing to provide international combined transport services;
- enterprises registered in the countries of the European Economic Area, which have mutual technical, legal and economic mechanisms of access to German operators;
- enterprises registered in other countries that have concluded intergovernmental agreements for the use of railways.

The second stage of the reform process, as provided for in the original legislation, was the transformation of divisions into subsidiaries. Five joint-stock companies were established. Each company must produce its own annual report and accounts and is responsible for its own business efficiency.

Currently, there is no schedule set by law for further reforms, and the nature of such reform is not defined. There are currently no plans to privatize any part of the rail transport group [186].

The reform of railway transport in Germany began almost fifteen years ago. This approach was systematic and ambitious, and the long-term plan was enshrined in law. Significant progress has been made in restructuring and opening up the access regime, including a sophisticated system of admission fees at infrastructure [261].

Preliminary signs that reforms are beginning to have expected effects [262]:

- the railway is preparing to participate in freight transport throughout Europe - its armament is a rational market

response to the regulatory base in the EU, Germany and the Netherlands [257, 261];

- open access operators are beginning to enter market niches.

However, high costs and other barriers may continue to hamper the entry of new operators for both international and national traffic. However, there are signs that barriers are falling.

For example, the new pricing regime should provide greater cost sensitivity to market needs [257].

Freight turnover in Poland reached its maximum in 1981 (137 billion tons km). Then by 1991 it had decreased by almost 51%. But so far it has a steady downward trend. This was due to a reduction in coal traffic, a reduction in grain imports and problems in the metallurgical sector. According to national statistics, the average share of railways was 59%, although this may be overestimated due to insufficient reporting of private road traffic [264].

Domestic transportation prevails (67% of loaded tons), and transit is only 3% of tons. PKP (Polish Railways) expects to lose part of the short-term rail freight. The distribution of cargo by nomenclature (tonnage) is as follows [366, 373]:

- coal 49%
- building materials 11%
- metals, metallurgical products 9%
- fertilizer and other chemicals 6%
- oil and petroleum products 5%

- iron ore 7%

In the period from 1981 to the present, the number of employees has decreased by 43% to 213 thousand people [264].

PKP's financial position varies from year to year. Until 1997, it was break-even, but then suffered significant losses of about 320 million euros [264].

PKP losses are associated with large losses of passenger traffic.

The deterioration of PKP results was mainly due to [257]:

- increase in costs due to depreciation, increase in labor payments, which meant that costs increased by 16%;
- a significant reduction in freight traffic, which meant that revenue could not grow and the ability of the freight business to cross-subsidize passenger business decreased. This reflects the vulnerability of PKP to fluctuations in demand, especially for coal, which accounts for half of all transported tons [257].

Profits from freight are used to subsidize passenger rail transport.

Not enough money for new cars. Rolling stock consists mainly of:

- old standard cars in poor condition;
- limited number of cars that meet international requirements (43% of coal cars meet these requirements);
- lack of specialized cars.

The modernization of PKP infrastructure and rolling stock requires massive investment to meet Western European standards [264].

The PKP Supervisory Board is appointed by the Minister of Transport. Members of the Management Board are appointed by the Supervisory Board. The Supervisory Board consists of 9 people, 3 of whom are trade union representatives.

PKP network in accordance with the Polish Law: "On Railway Transport" may be licensed for:

- train management in networks operated by other companies - since PKP operates in almost the entire network, it gives external operators access to the PKP network;
- railway network management (excluding industrial railways, if they do not want to sell excess capacity to other operators).

The Chief Railway Inspector (Główny Inspektor Kolejnictwa) must issue a license to provide services based on technical safety criteria.

Foreign railways can receive a concession only if there is an interstate agreement.

The rules for setting tariffs for access to infrastructure are set out in a ministerial decree. The rules are that the operator must cover the costs of operation and maintenance plus a margin of not more than 7%. Depreciation may also be charged if the line is built on an investment provided by the infrastructure administrator [264].

Already about 20 external operators use the PKP infrastructure. Many of them mine coal and have their own vehicles [264].

Significant progress has been made in reforming the railways in Poland. Once the draft law on the commercialization, restructuring and privatization of the PKP is approved by parliament, Poland will have one of the most liberal open access regimes in Europe. Privatization, which largely follows the German model, will cover not only train operations but also infrastructure [264, 261, 262].

However, the PKP is in a very difficult financial situation and is facing problems with its current financial obligations [264].

A large number of analyzes of the situation indicates the need for a very deep organizational measure and financial restructuring of assets and employment in the privatization process..

The passage through parliament of a bill on the commercialization, restructuring and privatization of the PKP is vital to addressing the problem of traditional cross-subsidization of passenger traffic from freight revenues. The new law provides for financial compensation from county (voivodship) authorities for the deficit of regional passenger traffic. A number of voivodships will start financing regional passenger transportation from the state budget. [264]

Romania. At the beginning of the 21st century, all Central and Eastern European (CEE) countries had to reorient their

economies in order to adapt to new economic and social realities. This reorientation has led to not entirely positive results of economic development. There have been reductions and structural changes in the economies of countries, which has significantly reduced the operational activity of railway transport [29]. The share of rail transport also had a steady downward trend, in favor of road transport [207]. Romania was no exception. The share of rail transport in the domestic transport market has fallen from 81% to 49% in 50 years [258].

Despite the steady decline, Romania's rail transport continues to be the main freight and passenger carrier. Currently, the total length of Romania's railway network is more than 11 thousand km. Almost 48% of polling stations are electrified, 31% of two-track lines. Fleet of freight cars 138 thousand units; 3.18 thousand locomotives [258]. Romanian railways began the restructuring process in 1991. It was a large organization that was overly bureaucratic and unable to adapt quickly to internal and regional change. [258].

The only way out of this situation was to change the existing organizational structure, which was exclusively focused on planned industrial production, as well as to improve rail transport so that it could meet the expectations and needs of customers on a commercial basis. The "basic" models of restructuring are analyzed (North America, South America, Sweden [257], Italy [245, 246], Germany, Great Britain [261, 262, 259, 234], France, Greece [268], Portugal [257], Spain [269]).

The restructuring of the Romanian railways was a three-stage one [258]:

Financial rehabilitation (1991 - 1997).

In the period from 1991 to 1995, a number of non-core activities were carried out, such as the reconstruction of railways, stations, overhaul of rolling stock [258].

Most of the rolling stock was separated and transferred to private companies.

In the period from 1995 to 1997, infrastructure, freight, passenger traffic and real estate were separated in accounting and financial reporting [258]. Mechanisms have been put in place to introduce charges for access to infrastructure and support for government commitments [258].

According to these new provisions, 25% of railway infrastructure financing should be covered by state contributions and 75% by infrastructure access charges [258].

At the same time, the railway began a painful process of staff reduction, which reduced the number of employees to 105 thousand employees (almost twice). Productivity has also almost halved.

As a result: staff costs are reduced by 55%; 325 railway stations and about 1,000 km of lines were closed; 455 passenger trains were written off; 1.2 thousand locomotives, 1.2 freight cars [258].

According to this government decision, on October 1, 1998, six railway companies were established [258]:

- Caile Ferate Romane (CFR), a railway infrastructure company;
- CFR Marfa, freight company;
- CFR Calatori, passenger company;
- SMF, a railway management company that provides legal services, foreign loans, financial and accounting assistance to the other five railway companies;
- SAAF, a railway asset management company that will manage and dispose of surplus railway assets;
- SNCFR, the rest of the existing company that will be responsible for managing and restructuring the old railway debt.

Companies can set their own rates, but they must compete with any open access operator (EU).

In the new structure, railway companies have full autonomy to provide services and conduct other business activities.

The methodology of licensing of new railway operators is accepted. Operators of public and / or private railway transport may obtain a license, provided that: their main activity is railway transport for freight or passenger transport; they own or rent the necessary rolling stock, with the necessary technical characteristics to ensure the safety and quality of transport services; they comply with the technical requirements for the operation of trains; they have qualified personnel for train management, maneuvering, preparation, repair, inspection of

trains; they fulfill the technical, professional and financial capabilities set by the requirements [258].

Of all the countries in Central and Eastern Europe, Romania was the fastest to restructure its railways. Although openly liberalizing access to infrastructure is not as well implemented as in Poland or the Czech Republic [264, 236].

If all the planned reforms are successfully implemented, the Romanian railways will be on a solid commercial footing.

Modern transport structures in Switzerland have been evolving for several decades. The Swiss Federal Railways (CFF) and franchised service providers (FSPs) cannot provide efficient transport services. Restructuring of rail transport brings Swiss railways closer to the new conditions and improves the framework conditions for service providers.

The main goal of restructuring rail transport is to make public transport more efficient and to improve the cost-benefit ratio. Railway companies must follow the rules of the market and make better use of their potential. Railway restructuring injects competition into the railway system. Only the provision of quality services at an affordable price will ensure the competitiveness of rail transport [257]. A further goal of the restructuring is to provide more transparent financing and improve cost control. The separation of political functions from corporate functions will provide a clearer division of responsibilities and clarify the respective roles of railway undertakings and the government.

The restructuring measures taken can be divided into two categories: those applicable to the whole of Swiss Railways and those to CFF only.

Four measures were applied to all railway companies.

First, the separation of infrastructure and operational operations [234]. Organizational sharing will create the right conditions for mutual open access to the network.

The delimitation of accounting provides the necessary transparency of costs. Cross-subsidization within the enterprise should be eliminated.

Second, ensuring open access to infrastructure [257].

This measure allows other companies to gain access to the railway infrastructure provided that the cost of access is paid. The goal is to increase competition between different operators [257].

Access to Swiss railways is open to companies from other countries that offer mutual agreements to Swiss operators.

Six requirements for obtaining a network access license:

The organization of the enterprise must be such as to ensure safe and reliable operation.

Has qualified staff.

Must have safe rolling stock.

Must be financially viable with proper insurance coverage.

It must meet the safety requirements specific to this line.

Third, the implementation of the principle of prepaid for all categories of traffic.

The government and the cantons purchase services from transport companies at a price agreed in the tender on a tender basis.

This principle will subsequently apply to all railway services. In the future, the railways will provide only those services that cover their costs or that are purchased in advance by government agencies.

Fourth, the liberalization of freight transport.

The objectives of railway restructuring also apply to freight transport.

Future measures / second stage of restructuring.

Railway restructuring should be seen as a process of gradual adaptation of transport to current requirements and conditions. As this is an ongoing process, the first package of measures presented here is inferior to another, which will gradually achieve better results (increased efficiency, optimal cost-benefit ratio, etc.).

The restructuring will be coordinated with the development of other areas of transport policy and with the development of the transport sector in Europe.

In the long run, depending on events and experience from current activities, other aspects can be integrated into the restructuring process. Harmonization of financial flows will be one of the main goals.

UK. Railways of Great Britain (England, Scotland and Wales). The railroads of Northern Ireland have always been managed by the public sector [259, 234].

In the XIX century. the construction of British railways was carried out by the private sector [259].

To eliminate the main inefficient results associated with duplication and overcapacity, the Railway Act of 1922 merged the railways into 4 private regional companies [234].

The nationalization of the railways did not take place until 1947, later than anywhere else in Europe.

Four regional companies were then reorganized into six regional groups within one national railway.

Further deregulation took place under the Transport Act 1962, which released British Rail (BR) from any obligation to take unprofitable traffic. Growing financial difficulties led to significant reductions after the publication of the Beeching report in 1963. [259]

The list of main reductions: the average mileage of rolling stock decreased by 35%; the number of freight depots and stations was reduced by 73%; the number of sorters decreased by 55% [259].

In November 1993, Parliament passed the Railway Transport Act 1993, which laid the groundwork for the privatization of the British Railways. The purpose of the Law was to improve the quality and efficiency of railway services [234]:

- introduction of competition;
- providing additional investment by the private sector;
- introduction of private sector management.

In preparation for privatization, the railways were radically reorganized. The vertically integrated structure was discarded. In 1994, the railway industry was divided into about 100 companies, all of which are now private. 25 operating companies provided passenger services under franchises, some of which are supported by the national and sometimes local government [234].

BR was vertically separated with the formation of the Railtrack, which owns, manages and allocates capacity for virtually the entire railway infrastructure (track, signaling, bridges and tunnels) [234]. Railtrack is also the owner of certain cargo terminals, crossings, depots and other premises.

Under the law, BR had three railway companies [259]:

- Trainload Freight, which accounts for 65% of rail revenues;
- railway transport services, which consisted of canal tunnel and Freightliner services, serving container domestic and foreign markets

Rail Express Systems carrying parcels and letters.

Current government policy [234].

In July 2008, the new Labor government published a White Paper on Transport. The main proposals that have affected rail transport [352]:

For the formation of strategic planning it is necessary to form a strategic management of the railway (SRA), both passenger and freight sectors.

This will allow:

- set goals for the growth of railway traffic;
- monitor network capacity and assess investment needs;
- to ensure due attention to cargo transportation;
- an infrastructure investment fund must be set up to address problems related to infrastructure constraints;
- it is necessary to take into account the periodic revision of the fee for access to the infrastructure;
- the regulatory body must be obliged to comply with the statutory instructions of the state regulator [234].

Some of these changes require new legislation and are included in the Transport Bill, which is currently being considered by Parliament [259].

The privatization of railways in Britain was a bold experiment. Although the changes are in line with the direction set by the EU Directives, the UK is the only place in the world where [234, 259]:

- the vertically separated infrastructure company was privatized;
- the private company occupied more than 85% of the railway market, but without direct control of the infrastructure.

Despite the previous government's initial intentions regarding privatization, the chosen structure of railway transport management restricts competition [257]. Two conventional carriers, EW&S and Freightliner, operate in separate markets, and a third operator, BNFL, transports nuclear fuel and waste.

The overall impact of the reform on rail transport is positive [234].

It is possible that efficiency gains may be due to the transfer of ownership to the private sector rather than changes in the regulatory environment. Therefore, it is difficult to conclude whether the current regulatory environment has contributed to the revival of rail freight after privatization.

North America. Freight markets in North America have changed recently, in part as a result of the North American Free Trade Agreement (NAFTA), which has helped increase traffic between the United States, Canada and Mexico. International traffic between NAFTA members increases by 13-15% annually. This has led to an increase in international operations, as well as transnational ownership and strategic alliances. These trends meant that deregulation in one country, particularly the United States, affected the development of regulatory structures in others.

The growth of transnational ownership has taken several forms:

- US rail companies have bought some of the smaller railways in Canada, and most recently the BNSF (US) offered to acquire a Canadian national company;
- Canadian railroad companies bought Class I railways and smaller railroads in the United States;
- American railway companies took part in the acquisition of Mexican railways.

In Mexico, American carriers have a stake in all four recently privatized systems. However, in the United States and Canada, each national market is dominated by national carriers [257]:

- in Canada, two major Canadian operators have 85% of the market;

- in the United States, American carriers generate 91% of revenue, and the rest - from the two main Canadian transcontinental carriers.

United States. Because of the size of the geography and structure of the United States economy, there are:

- a high share of freight traffic consists of basic cargo - for example, 65% of the total volume of coal is transported by rail;

- average length of transportation - up to 1300 km);

- 30% of cargo is carried on international markets through the port or, increasingly, within NAFTA.

As a result, the railway has a competitive advantage in freight transport. Due to long distances, low air fares, high car ownership and low gasoline prices, passenger traffic is not competitive [123]. Therefore, freight dominates the railways.

The Interstate Trade Commission (ICC) was established to regulate industry in 1887, when the railways had an advantage in the transport sector and there were fears of abuse of monopoly power.

Regulation was then tightened, despite the fact that railway construction declined somewhat in the first half of this century. In 1945, about 65% of all cargo was still transported by rail. This share decreased to 35% in 1985.

Amtrak National Passenger Railway Corporation was established in 1970 for long-distance passenger transport from private railways, which was later converted into freight transport [257]. This was in response to the increase in losses incurred by these services, the lack of investment and the deterioration of service, and additional problems caused to carriers. Amtrak is a federal corporation subsidized by Congress. Amtrak owns the railway infrastructure it uses in the north-east and has the right to operate on all other tracks under contract agreements with the infrastructure owner [234].

In response to pressure from shippers, Congress is currently considering a number of pieces of legislation that partially improve railroad performance by:

- removal of immunity from the antitrust process;
- introduction of access rights of third parties;
- tighter regulation of tariffs.

The common goal of the proposals is to increase competition. However, the American Railways Association (AAR), which represents all Class I railroad tracks, claims that [180]:

- there is enough competition for most traffic;

– if competition is insufficient, shippers already have the right to require STBs to set maximum rates.

One of the controversial issues is what will happen with the return of capital (currently 10%) in the absence of regulatory changes.

The AAR says that on behalf of the industry, this profit will decline as easy opportunities to improve financial performance have already been made and significant investments are needed to achieve further improvements. However, recent trends have been positive, and the recent round of mergers may improve financial performance. [29].

The balance has now shifted too far from shippers in favor of the railways.

Within its existing powers under current law, STB also addresses a number of other issues [242]:

Do railways have the opportunity to make adequate profits, and can they withstand the effects of greater regulation?

Are the rates currently charged to the shipper - the current total rate of return on capital 10% low?

What can I do to avoid a recurrence of Merger issues?

In the context of the proposed merger between BNSF and CN, STB State will conduct a public inquiry, starting in March 2020, regarding the consolidation and structure of the North American rail industry. It is speculated that the BNSF / CN merger will lead to a new round of mergers, which will eventually lead to the formation of two transcontinental

railways. Regardless of how the merger takes place, STB may require, as in the past:

- merged operators abandon infrastructure where it will lead to competition [180];
- access rights must be granted to other operators.

Given the low incomes of the industry during the 2000s, the basis for reorganizing the industry is now weak. Only when the merger leads to excessive profits should stricter regulation of the rate of return be considered.

Canada. The early development and current role of freight in Canada is similar to that in the United States. Indeed, the average distance of transportation is 1200 km, and bulk transportation is more dominant than in the United States.

At the beginning of this century, a hybrid approach to railway ownership and regulation was adopted, combining public ownership into one of two major transcontinental systems, the Canadian National (CN), which was established in 1919 from the bankruptcy of private companies and privatized in 1995. its flotation on the stock exchange.

The Canadian railroad system has always been privately owned. One of the distinctive historical features of rail transport in Canada has been the subsidization and regulation of wheat transportation. Subsidies were discontinued in 2006, but maximum rate regulation is still in place.

Recent trends indicate an increase in north-south traffic compared to east-west traffic. The share of shipments to or from

the United States has increased from 19 to 32% over the past 10 years.

In December 2009, BNSF, the second-largest U.S. railroad company, and CN announced their intention to merge through a "combination" to form a new cross-border company. This will be subject to judicial review in Canada to ensure that it is fair to CN shareholders and that it complies with Canadian legal and regulatory requirements.

Given the adoption of the National Transport Law as the first significant step in the field of deregulation, the impact can be assessed by examining trends between 1988 and 2010. During this period:

- profit increased by 12% in nominal terms and revenue per ton-km by 19%;
- average income tariffs per tonne-km decreased by an average of 8% (in real terms 27%);
- the number of staff decreased from 73 thousand to 45 thousand;
- labor productivity increased by 92%;
- operating expenses decreased by 1.5%.

The slowdown may be partly due to the abolition of the obligation to disclose rates in the National Transport Act.

Average rail freight rates are the lowest in any developed country.

Until recently, the profitability of rail transport (including passenger transport) has declined.

For CN, there has been a significant improvement in operating margin recently, which increased from 21.3% in 2015.

The improvement in results is partly due to improved efficiency of the Canadian national organization before and after privatization (staff reduction) [76, 257].

Australia is a sparsely populated country with a population of almost 20 million. There are significant reserves of minerals that are important to the Australian economy.

Coal alone accounts for 70% of the tons transported by public railways.

Rail transport is ideal for transporting bulk cargo over long distances - 58% of total freight transport by land was transported by rail.

As in North America, rail passenger transport is limited outside large cities due to long distances and therefore rail freight predominates.

There is limited potential for direct competition between operators due to the small number of cargo owners on one line [180]. Third-party access provisions apply to most networks.

Interstate rail freight is relatively underdeveloped, in part due to the historical lack of network integration [257]. The interstate rail system in Australia is underused in general, but there is some competition for peak places over time.

For example, for goods transported from Melbourne to Perth, the desired time of arrival is early in the morning. The main streams include:

North-South along the east coast, connecting Victoria, New South Wales and Queensland;

East-West from the east coast through South Australia to Western Australia.

Since the introduction of the provisions on access to rail transport in 1995 under the Trade Practice Act, competition in the railways has developed on the East-West corridor. This has led to an increase in traffic [180].

The rights of third parties seeking access to infrastructure under the Australian Commercial Practices Act have provided an effective basis for the development of competition in the relevant markets, albeit more slowly than many parties wish. [180].

Promising issues to address are: enabling operators to develop national regulatory regimes that meet the minimum set of access requirements; enabling third parties to require the National Competition Council to intervene to improve access to infrastructure; granting owners permission to go to court if they believe that there are insufficient economic grounds to justify third party access [180].

All this will gradually achieve the goal - the introduction of competition, in a way that will affect existing companies in order to reduce costs without significant erosion of economies of scale [180, 333].

Ensuring adequate investment and return on investment in the sector is a nationwide challenge that will depend to a large extent on the development of effective measures for the use of

track infrastructure in parallel with regulatory reforms on the railway tracks themselves. This is the subject of the recommendations of a separate survey of the Productivity Commission conducted in 2013 [234, 259].

Japan has 165 railway companies. 32 of these companies are rail freight operators, with one dominant player, JR Freight. The main focus of rail transport is on passenger transport, not freight.

Most of Japan is mountainous, with some flat lands off the Pacific coast, where many densely populated cities are concentrated. This corridor is suitable for rail transport, as evidenced by the high-speed Tokaido Shinkansen Railway. The densely populated areas of Tokyo, Nagoya and Osaka provide large markets for the railways. Thus, the Japanese transport market is conducive to railways, at least for passenger traffic. Japan's National Railways (JNR) began accumulating debt after 1965. During this period, the government began four financial restructuring plans, reorganizing long-term debts. However, JNR was unable to restore capacity.

JNR's long-term debt has reached \$ 26,000 billion. A special commission on administrative reform recommended the distribution and privatization of the JNR. It was determined that the company was in fact bankrupt. The JNR Restructuring Oversight Committee made recommendations that outlined the Prime Minister's privatization program. Six regional passenger companies were established, dividing the country into six predominantly geographically defined areas.

JNR's nationwide freight transport has been adopted by one new freight company, Japan Freight Railway Co. (JR freight). Six JR passenger transport companies pay the Japanese Railways for the use of infrastructure and other facilities [269].

On the railways, the results of the reform were much better than expected. The volume of cargo transported by JR Freight has also increased.

Measuring the performance of different railways as a result of reform is not easy [53].

Railways produce many types of products (transporting different products between different points of departure and destination at different times of the day / week / year), using a large number of resources, subject to common costs and significant economies of scale [24]. In addition, their productivity is strongly influenced by the geography of the territory in which they operate. Therefore, there are difficulties with the interpretation of any set of indicators of operating, commercial and financial activities [53].

The inability to identify different traffic, the cost of which varies greatly, will greatly affect the economic outcome [24].

Accounting for cargo transportation is particularly difficult due to the lack of a uniform unit of measurement. A ton of freight can cost very different amounts to transport depending on whether it is a dense product or not. Freight turnover may be the best unit of measurement. And it may be necessary to take into account the difference between cars and containers or intermodal traffic [250].

Joint costs are a particular problem. A single-track, inactive section can have both passenger and freight traffic, a passenger train of the first and second class of passengers and a freight train of various goods. In this situation, only some costs can be specifically attributed to one form of traffic; other costs are common. As a result, railways are usually characterized by economies of scale [24].

The result is that the apparent increase in productivity may be due to the diversification of new products or an increase in the intensity of rail traffic, rather than an improvement in the efficiency of tasks. The value of international comparisons of railway reform indicators is also due to the similarities and differences in the compared networks [24, 257].

2. HISTORICAL ASPECTS AND PROBLEMS OF DEVELOPMENT OF LITTLE SECTIONS OF RAILWAY TRANSPORT

2.1. Actual problems of operation of inactive sections of the railways of Ukraine

Domestic railway transport, based on its technical-technological-economic condition and taking into account the need to implement integration processes in the European transport system needs to provide a mechanism for sustainable development.

Railway transport of Ukraine has a number of features. First, it is a rather complex functional and organizational system, which covers a large number of links of transport, including locomotive and wagon economy, freight, passenger and logistics, track management, communications, automation, telemechanics, energy, economy of information technologies, protective forest belts, water supply services, economy of construction and installation works and civil constructions.

Sustainable development of the railway industry as a system is ensured by the joint-stock company Ukrzaliznytsia (hereinafter JSC Ukrzaliznytsia), which was established on December 1, 2015, 100 percent of the shares, which are fixed in state ownership. The purpose of this company is to meet the needs of safe and quality rail transport in domestic and international traffic, to ensure the efficient operation and development of railway transport. The company provides 82%

of freight and almost 50% of passenger traffic, which is carried out by all modes of transport [86].

JSC "Ukrzaliznytsia" is the legal successor of the State Administration of Railway Transport of Ukraine, as well as subordinate enterprises and institutions that had the status of separate legal entities. JSC "Ukrzaliznytsia" includes 6 regional railways and about 140 other structural enterprises (Fig. 1.1.).

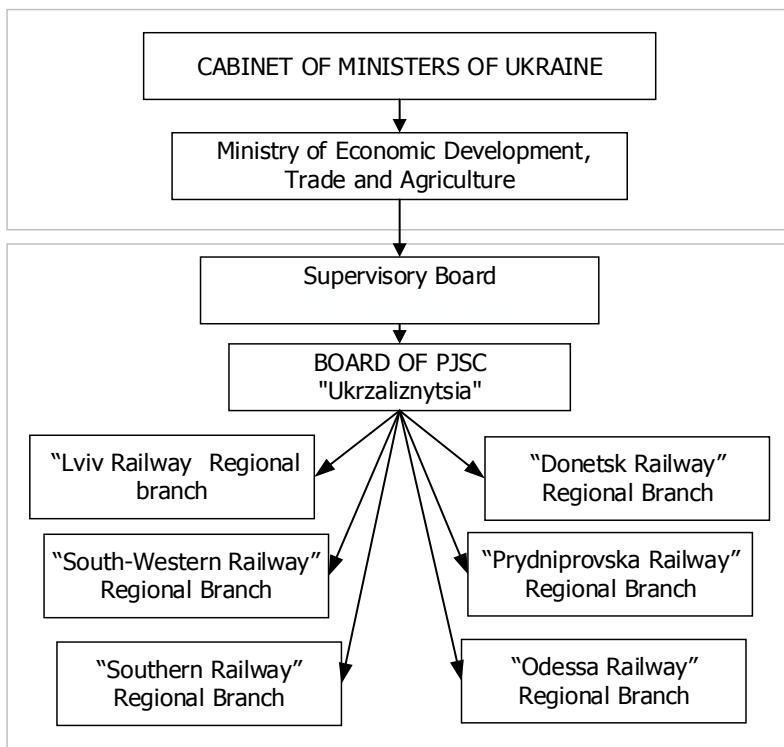


Fig. 2.1. Management structure of PJSC "Ukrzaliznytsia"
 * Developed by the authors on the basis of data [40 -50]

The National Railway Network is a strategic asset of Ukraine and a key link in transport between the EU, Russia and Central Asia.

In the context of railway transport reform, the issues of its effective functioning and the formation of a model of its sustainable socio-economic development are especially relevant.

However, due to a set of technological reasons, the problem of operation of inactive sections of the railways of Ukraine has affected.

Low-activity sections include stations and lines that are part of the network that is part of the Regional Branches of PJSC "Ukrzaliznytsia". They are part of the property of this Public Joint Stock Company.

Given the problem of functioning of inactive sections of railway transport in the context of reforming the industry, at present, we have studied the scientific works of domestic and foreign scientists who have dealt with this issue. As a result of the analysis of scientific sources on this issue and within the framework of the conducted research, further measures have been developed to increase the efficiency of their work. After all, this is one of the most important tasks facing the management of railway transport today and needs an immediate solution [250].

Operation of inactive sections of the railways of Ukraine, serving the population, enterprises located in the area of their attraction, brings PJSC "Ukrzaliznytsia" quite significant losses

and is accompanied by considerable difficulties of organizational and managerial nature (maintenance and repair, staffing, traffic safety, etc.).

Therefore, the main purpose of the monograph is to ensure the effective functioning of inactive sections of railway transport in terms of reforming the industry [252].

Current general economic trends, the unstable political situation and military action in eastern Ukraine significantly affect the work of the entire transport sector, which is reflected primarily in the reduction of freight and passenger turnover. Thus, according to the results of 2014, the total cargo turnover in Ukraine decreased by 11.6%, passenger turnover - by 17.4% compared to the same previous period, and in 2015 cargo turnover decreased by another 5.9% and passenger turnover by 8.4%. % compared to 2014 [251].

The main reasons for the reduction of freight and passenger transportation by rail are the deteriorating economic and political situation in the country, declining production, declining incomes, the annexation of Crimea by Russia, hostilities in the east and more.

Currently, the task of inactive sections is to fully satisfy the transportation of enterprises of various industries and the population; integrated development of their capacity; coordination and unification of parameters of their technical means; ensuring a single technology and coordinated organization of work with different modes of transport, transfer of goods from one mode of transport to another, transfer of

passengers and the organization of comprehensive transport and forwarding quality service; unification of tariffs, conditions and rules of transportation of cargoes and passengers, planned, reporting, operational and economic indicators of work, their harmonization with the international standards and rules [77, 78, 80, 195, 202].

Factors influencing the results of operation and development of inactive railway lines include [79]:

- economic (dynamics of development or stagnation of the economy of regions that tend to inactive lines, the volume of investment in industry, the level of agricultural development, etc.);
- demographic (dynamics of population change, share of working population, etc.);
- socio-political;
- military-strategic.

The main component of Ukraine's complex transport system is "rail freight and passenger transport". In the market of transport services, inactive sections, accounting for one-fifth of the total operational length of the state railway network, perform only 2.37% of total freight turnover, with 83.2% of freight and passenger transportation by rail. But their role in this period of time in the overall transport system of Ukraine is quite significant. Their operation allows to satisfy in transportations of production of the enterprises and movement of the population of 19 areas of the state. Because of this, inactive sections attract the attention of specialists in the transport industry.

Inactive sections, problems of their functioning, also come from the extremely difficult financial situation of railway transport. Taking into account also the need for transport of "depressed" economic areas, we believe that the state should take a direct part in maintaining their functioning.

The author analyzes the preconditions for the formation of the railway network of Ukraine. The study revealed a whole group of guiding factors that in one way or another influenced the formation of the railway network. First, it is the need for reliable, uninterrupted transport support for a country that was in a state of intensive economic development. Secondly, the need to quickly transfer troops over long distances to ensure the state's defense capabilities.

Given the considerable distance in the location of the productive forces of the state, the construction of railways at that time justified the efficiency of operational activities, as the share of costs for initial and final operations with increasing distances tended to decrease per unit. The proposed measures are aimed at improving (optimizing) the railway network.

Currently, inactive railway sections are unprofitable because the existing tariffs for individual goods are formed on the basis of the average network cost. PJSC "Ukrzaliznytsia" from their operation bears a tariff load that is many times higher than transportation costs. And since inactive lines are one of the components of an integrated railway system, the transportation process is always combined with collection (loading and initial operations) and distribution (final operations and unloading).

Given the above, it can be concluded that comparing all train sections on the same requirements, both by the state and society is impractical and unreasonable. Due to a significant increase in tariffs for rail transportation (in the segment of short-haul transportation), the volume of rail transportation in low-activity sections decreased significantly. The main competitor here is road transport. Moreover, the tariffs for transportation are almost the same, and in other indicators the service of road transport even exceeds the capabilities of rail transport in inactive sections. This trend is also confirmed by statistics on the average distance of road transport. Ways to solve problems with the operation of inactive sections of the railways of Ukraine are presented in Fig. 2.2.

The problem of unprofitable inactive railway tracks should be solved for each of them separately, on the basis of the corresponding technical and economic substantiations in the following variants:

- compensation of losses of railways by local authorities or owners of access tracks;
- transfer of polling stations, stations to the balance of local administrations or user enterprises;
- closure if the issues of compensation for railway losses are not resolved.

Reducing the operating costs of inactive sections while maintaining high quality and safety of transportation is one of the most important tasks, the successful solution of which

depends on the growth of competitiveness and efficiency of all rail transport.

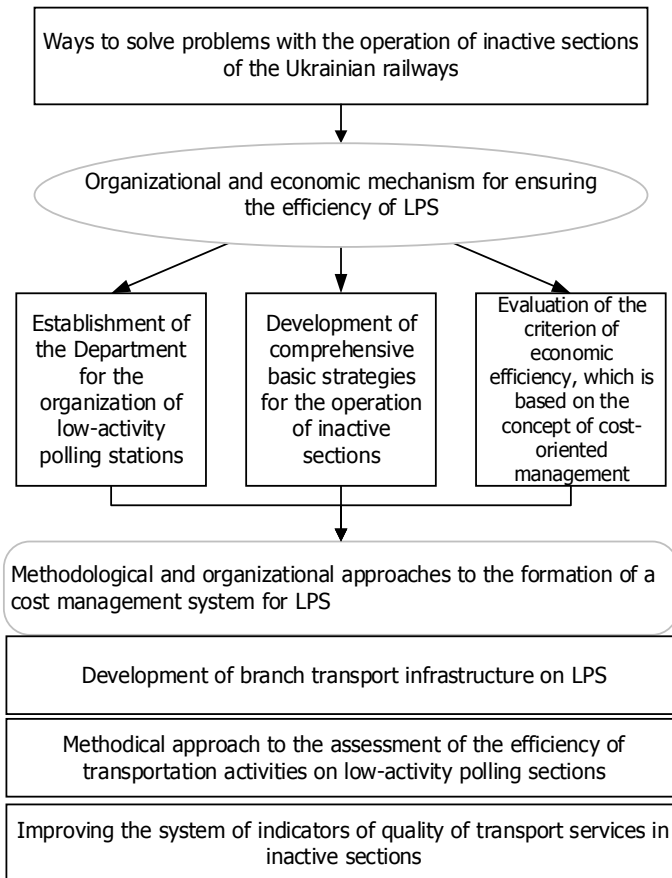


Fig. 2.2. Ways to solve problems with the operation of inactive sections of the railways of Ukraine

** Developed by the authors by [76]*

Over time, railway management systems should implement effective planning at all administrative levels, which

will provide clear automated management in a highly dynamic environment, preventing controversial situations of validity of the use of infrastructure of inactive sections at the stage of their entire life cycle.

2.2. Dialectics of transport infrastructure development in Ukraine

The transport complex of Ukraine is a set of different types of transport that provide transportation of goods and passengers. It includes rail, road, sea, river, air and pipeline transport with all communications, transport hubs, rolling stock, loading and unloading facilities, devices and structures. The purpose of its activities - the full satisfaction of the national economy and population in transportation with a rational distribution between modes of transport, while reducing transport costs; integrated development of link capacity; coordination and unification of parameters of technical means of each type of transport; ensuring a single technology and organization of work of different types of transport, transfer of goods from one type of transport to another, transfer of passengers and organization of complex freight forwarding, quality service; unification of tariffs, conditions and rules of transportation of cargoes and passengers, planned, reporting, operational and economic indicators of work of all types of transport, their harmonization with the international standards and rules [38. 40, 65, 66].

Economic and historical analysis of the formation of transport infrastructure is important because it took place in different socio-economic and political conditions.

Each of the stages significantly changed both the general situation and conditions, as well as the tasks facing the transport system and ways to solve them. In the development of the transport complex can be identified the main stages, which are presented in table 2.1.

In changing conditions, structural and staffing transformations were carried out, personnel policy was clarified, relations with related departments and local authorities were formed that were more appropriate to the new circumstances, better organizational and technological solutions were introduced, and so on.

The main task of transport is to fully meet the needs of economic regions of Ukraine in transportation [40, 51, 63].

The efficiency of transportation of various cargoes: fuel, raw materials, semi-finished and finished products, and also separate knots, details and materials for business entities depends on accurate work of a transport complex and its infrastructure.

The successful decision of problems of complex development of national economy and each economic area and normal maintenance of interdistrict economic communications directly depends on it. [66].

Table 2.1.

The main stages of formation of transport infrastructure *

№	Stages	Period of development	Features
1	A period of calm development under the tsarist regime	The second half of the XIX century. - until 1914	
2	The period of destruction and practical paralysis of transport	Years of the First World War, civil war 1914 - 1922, including the post-revolutionary period	Martial law was imposed on transport, the activities of the institute of emergency military commissars (1918-1922), the "troika" to combat destruction, bribery on transport and theft of goods, and even the cessation of passenger trains.
3	Reconstruction period	1923 - 1928	
4	Years of industrialization, collectivization and pre-war economic development:	1929 - 1941	The period of the first, second and third five-year plans
5	The Great Patriotic War	1941 - 1945	
6	The period of postwar recovery	1946 - 1955	Years of the fourth and fifth five-year plans
7	The period of radical reconstruction of the transport complex	1956 - 1985	Years of development of scientific and technological progress
8	Years of "acceleration and restructuring"	1986 - 1990	They passed into the years of "stagnation", and then the collapse of the Soviet Union, the collapse of the CIS economy (1991-2000), which led to a sharp decline in transport
9	Current period	2001 - present	Market adaptation, the need to implement measures to reform the transport complex of the national economy, its harmonization with world best practices and legislation

* Generalized by the authors for [51, 54, 74, 108, 111, 160, 229].

Transport infrastructure plays an important role both within economic areas. Its normal operation reduces transport costs and accelerates the turnover of tangible assets throughout the national economy.

The rhythmic work of the transport complex makes it possible to organize a stable supply of raw materials to enterprises, not to create large stocks of them and allows you to fully implement the logistical principles of managing their activities.

Modern transport infrastructure of Ukraine is a complex system that includes various modes of transport. Each type of transport has its advantages and features in the process of carrying out transportation activities.

Transport infrastructure of Ukraine is a basic branch that forms the production infrastructure of the national economy and unites the whole national and economic complex of the country [34, 124, 250, 187, 227].

Improving the efficiency of transport is achieved by coordinating its development and interaction in order to rationalize the use of funds, speed up delivery and reduce transport costs, more complete satisfaction of the national economy and population in transportation.

Issues of coordination of development and interaction are solved in the economic, technical, technological, financial, organizational, informational and legal spheres of activity.

The economic sphere is based on a market-oriented system of transportation planning, which allows on the basis of state

programs of long-term development of the national economy to reasonably determine the long-term needs for delivery of goods, passengers, mail, luggage and optimally distribute them for each mode of transport. involving several modes of transport. This approach allows you to determine the congestion of highways and prospects for the development of the transport system as a whole and its individual elements. In this area of coordination of different types of transport is expected in the future to create a single range of goods transported, the development of comparable items of operating costs, transportation costs, productivity and efficiency [38, 69].

The purpose of technological coordination is a comprehensive organization of operation of different modes of transport with optimal organization of freight and passenger flows, coordination of freight and transportation activities, organization of delivery on connected schedules of different modes of transport, shippers and consignees, optimization of complex technological processes of large transport hubs.

One of the most important elements of coordination is the technical sphere, which includes: coordination of capacity and processing capacity of interacting systems, which are the flow of goods and passengers in mixed traffic, as well as basic devices in transport hubs; consideration of mutual requirements and connection of parameters of a rolling stock on dimensions, loading capacity and capacity for the purpose of the most effective use of reloading fronts; creation of means of reliable and convenient communication between the operative workers

engaged in logistic operations.

The financial sphere is based on the development of a single methodological basis for tariff models compared on different modes of transport in order to create the most favorable conditions for rational, from a national-economic point of view, the use of each and the development of mixed connections [34]. It also takes into account the order of material responsibility of each of the parties for the implementation of the transportation plan and the safety of the goods, the fair distribution of income in the organization of a mixed service.

The task of the organizational sphere of forming a balanced management system of all modes of transport in general is to develop regulations with the participation of stakeholders that regulate the operation of various modes of transport for a long period.

The legal sphere of coordination includes the solution of various legal issues of interaction between modes of transport among themselves, as well as between them and cargo owners or passengers [40]. The rational use of technical means of transport and the fuller satisfaction of the needs of the national economy of Ukraine in transportation at the lowest cost largely depend on how clearly and correctly the mutual obligations and responsibilities of the parties are defined.

Based on the analysis, it is advisable to identify specific features of the transport infrastructure of the national economy of Ukraine as an integral part of production infrastructure, which must be taken into account in shaping the prospects for long-

term economic development of the industry, as presented in table 2.2.

Table 2.2

Specific features of the transport infrastructure of the national economy *

№	Content features
1.	By moving material flows, transport increases the consumer value of their elements without changing the material form.
2.	Unlike the sphere of production of material products, the products of transport infrastructure cannot be produced in stock, accumulated or stored.
3	Transport infrastructure is a material-intensive, capital-intensive, capital-intensive sphere of the national economy, which is characterized by a significant length of time of development and return on investment, which potentially causes low investment attractiveness [95, 270].
4	Transport infrastructure is a set of production elements that are in constant interaction with each other, as a result - the emergence of an emergent effect and a variety of ways to achieve strategic objectives.
5	Transport infrastructure in the process of life does not create new material products, and serving enterprises, organizations is an integral part of the sphere of material production.
6	Transport infrastructure is characterized by significant "bursts" of demand for transport products caused by uneven transportation in time and space.
7	Many transport infrastructure facilities operate for a long time in conditions of uncertainty and risk, as their long service life and irregular reproduction processes lead to a situation where facilities have to operate in new conditions (high axial, running loads, new design schemes of rolling stock). different from those for which they were originally designed.
8	Given the targeted nature of the transport infrastructure of Ukraine (economically justified, rational areas of application of different modes of transport), many facilities do not have full or partial territorial interchangeability, which makes them unique in terms of capacity, and in most cases they are limiting factors of transport connections and in these areas it is impossible to ensure competitive interaction of different modes of transport.
9	Despite all the study of the transport process, a wide range of transport products creates such types of transport and non-transport effect, which even today is difficult to adequately reflect in the form of qualitative and quantitative indicators of transport infrastructure.
10	Products of transport infrastructure are conditionally raw materials. The main elements of costs in the cost of such products - wages, energy costs and depreciation.

№	Content features
11	Given the complexity of the technological process, the need to ensure the interaction of all elements of transport infrastructure to ensure a normal production process in transport contains the widest range of cost items from the range of costs for the main activity.
12	In transport, in contrast to the manufacture of products in the material sphere, it is difficult to ensure the production of substitute products and, consequently, to ensure full competitive relations between modes of transport, because too wide range of conditions, factors, opportunities affecting transport, so development prospects transport infrastructure is most likely not so much in competition as in rational interaction (container, piggyback, intermodal transport, etc.).

** Generalized by the authors for [32, 33, 40, 42, 45, 51, 54, 61, 65, 66, 76, 77, 78, 80, 123, 250, 252].*

An organic part of the production process of each enterprise of the national economy is the transport infrastructure. Delivery of all types of raw materials, fuel, products from production points to consumption points determines the most important economic role of the main transport infrastructure and ensuring the movement of inventory within the production process - domestic [34, 252].

Connection of corresponding economic entities by the transport network is the most important condition of their economic interaction. It is an integral part of the production potential of the national economy of our state, significantly increasing productivity and combining the production capabilities of enterprises and organizations into a single production complex.

During the period of intensive development of the transport infrastructure of Ukraine, the transport network acted in fact as the only possibility of forming territorial production

complexes scattered throughout the country, with a total area of 603.7 thousand square meters. km, at different distances [51].

Transport infrastructure is a decisive factor in economic integration and harmonization of economic and legal bases between countries, which provides international economic relations [34, 80]. Ukraine shares common borders with Belarus, Russia, Poland, Slovakia, Hungary, Romania and Moldova. The water part of the transport infrastructure allows to connect the country with economic ties with the Republic of Bulgaria, Georgia, Turkey.

The importance of the efficient functioning of transport infrastructure for the country, which is geographically located in the center of Europe (the geographical center of Europe - near the city of Rakhiv, Transcarpathian region), is extremely high.

Ukraine has access to the Black and Azov Seas, which increases the importance and role of transport infrastructure that connects the country with the countries of the Mediterranean basin.

The territory of Ukraine is crossed by the most important transport highways connecting Western Europe with the countries of the Asia-Caucasus region.

Transport infrastructure has the most important economic, political, social, cultural and strategic functional purpose in the national economy of Ukraine [75, 79].

At the same time, Ukraine's transport infrastructure itself is the largest sector of the national economy. The share of fixed assets of transport infrastructure, which is subordinated to the

Ministry of Infrastructure of Ukraine is about 14.5%, in total, the national economy [77].

The transport infrastructure belongs to the services market segment with a market share of 75% [53]. Turning to macroeconomic terms, the share of transport infrastructure in the total gross domestic product of Ukraine is fifteen percent. In turn, transport infrastructure is the most important donor to the state budget of Ukraine - more than 30% of total payments [53, 69]. According to the State Statistics Committee, the transport and communications sector employs 7% of the total population employed by type of economic activity [203]. At the same time, the contingent occupied on departmental and city transport, and also on loading and unloading works of the enterprises of various branches of national economy is not considered.

However, not only the transport infrastructure by its activities ensures the effective development of various industries, but also most enterprises in various industries, one way or another, operate to meet the needs of transport infrastructure. Thus, the enterprises whose main consumers of products are transport infrastructure include - automotive, shipbuilding, aircraft, locomotive, car industry [76]. Fuel, energy, metallurgy, forestry and many other industries also partially serve the transport infrastructure.

Therefore, the number of employed population (directly or indirectly) in the transport infrastructure, exceeds a third of the working population of Ukraine [203].

In 2013, about 1837 million tons of various cargoes were transported by public transport alone.

At the same time, the total transport costs of infrastructure, taking into account the costs of cargo and warehousing, are, according to expert data, not less than 280 billion UAH. per year [65]. And all these costs are reflected in the cost and final price of inventory, the movement of which is the subject of transport infrastructure. Therefore, the share of transport costs in the price of many goods transported by transport reaches 50%.

In some cases, transport costs for the transportation of goods (sand, gravel, etc.) are many times higher than their cost at the place of production.

Transport infrastructure is also important as a factor of political influence. Twenty-five regions of Ukraine exchange material and spiritual values between peoples, nationalities and ethnic groups, which is especially evident during natural disasters or adverse political factors. Transport infrastructure also provides significant assistance in establishing international relations.

Powerful potential is carried by the transport infrastructure, performing a social function in providing work, household trips. Relief through the transport of manual labor - when moving large amounts of materials in the production process and in everyday life is the result of the implementation of the social function of transport infrastructure.

During the transition to market conditions, economic entities of transport infrastructure have undergone various stages

of interaction. Under socialist conditions, various modes of transport were free from economic rivalry. Rational areas of application were centrally established for each mode of transport of the single transport system.

Difficulties and problems of choice could arise for consumers of transport products only at the junction of the interaction of modes of transport [12, 134].

In the 2000s, enterprises of different modes of transport, having different forms of ownership, against the background of a significant level of depreciation of fixed assets, falling production in the cargo-forming industries, entered a phase of active economic competition [2, 13, 137].

Today, in the period of development of many integration processes between countries, industries - the tendency of development of processes of interaction and establishment of economic relations between the enterprises of transport infrastructure of Ukraine is traced. The most promising area of cooperation is the development of intermodal connections.

But the problems here are due to technological and especially organizational disagreements mainly between transport agencies.

According to Gordienko IV, intermodal services are mixed door-to-door transportation, which are prepared and performed under a single management from one center. Their organizer at all stages of development and implementation of the transportation process purposefully coordinates the actions of all parties involved: cargo owners, carriers and transportation

complexes - in the interests of accelerating the transportation of goods and reducing the total cost of their transportation [33].

In general, on the basis of the study of economic and historical bases of formation of transport infrastructure of Ukraine, it is possible to allocate the basic requirements formed to it which are shown by the enterprises of cargo-forming branches of national economy (tab. 2.3).

Table 2.3.

Basic requirements of enterprises of cargo-forming branches of the national economy to the transport infrastructure of Ukraine *

№	Contents of requirements
1.	Full and timely satisfaction of the needs of the national economy and population in transportation.
2	Reducing the time of delivery of goods in order to accelerate the turnover of working capital and reduce the cost of cargo on wheels.
3	Ensuring a reduction in the cost of transportation.
4	Timeliness, accuracy of departure and delivery of cargoes and passengers.
5	Guaranteeing complete safety of transported goods, both in terms of volume and quality.
6	Increasing the level of comfort for passengers at points of departure, destination and in the process of movement.
7	Ensuring environmental and technical safety of vehicles.

* *Developed by the authors for [65, 252,78, 51, 54].*

Compliance with the above requirements can be considered an indicator of the quality of transport infrastructure products, which in market conditions is a primary factor in increasing the competitiveness of this sector of the national economy and a catalyst for the development of favorable economic processes in other industries [11, 73].

The authors' detailed analysis of the economic and historical foundations of the formation of Ukraine's transport infrastructure revealed factors that had a decisive influence on the initialization of the process of construction of railways in certain areas, in certain areas.

The sources of formation of freight flows on railway transport are revealed and the possible reasons of formation of inactive sections are revealed.

By inactive sections we mean sections that are significantly inferior to the average volume of traffic per day of passenger and freight trains, compared to the same indicator for the railway as a whole (not more than 20%), and does not reach a break-even level due to low traffic.

The process of active construction of railways in Ukraine began in the second half of the nineteenth century [100]. The process of formation of the capitalist system in the economy of Ukraine gave a significant impetus to the development of the railway network. As a result, the tendency of mass relocation of the country's inhabitants to city-forming enterprises, factories, factories (urbanization) was clearly manifested. All this was supported by the abolition of serfdom. Cities grew, new industrial complexes opened. It was at this time that the most efficient system of communication for that time appeared - railway transport, in response to the demands of industrialization and the then capitalist system [257]. This is the time of the birth of railway transport of our state. Subsequently, separate sections were formed into six connected links of a single transport

system, which today are called Lviv, Odessa, Prydniprovska, Donetsk, South-Western and Southern railways [108].

If we reflect the stages of construction of the railway network in Ukraine on the dates of their birth, which were celebrated as an anniversary in a century or more, the historical chronicle of their emergence, according to many scholars and practitioners will look like this: Lviv Railway - 1861; Odessa Railway - 1865; Southern Railway -1869; Donetsk Railway - 1869; South-Western Railway - 1870; Dnieper Railway of 1873 [108].

The beginning of railway connections of modern Ukraine is laid in its western part. Historically, this part of Ukraine belonged to Austria-Hungary.

This happened in 1861, when the Przemyśl-Lviv unit was built. That is why the oldest railway in Ukraine is Lviv. As a result of elucidating the place of transport infrastructure in the national economy of Ukraine, the main features of technical armament and technological process of operational activity, interdependence between individual elements and branches of transport economy, it was determined that transport infrastructure companies turned a once backward agrarian country into an industrial state. There was an increase in industrial and agricultural production. Successes in the development of industry and agriculture would be impossible without a strong transport infrastructure. Coal, oil and other fuels, without which they cannot work, must be brought to new and existing plants and factories; machine-building plants need

to obtain metal from metallurgical plants; it is necessary to deliver sowing materials, tractors, consumer goods to rural areas; Agriculture, in turn, presents for the transportation of bread, livestock and various agricultural products, without which the population of our cities cannot exist.

All these cargoes must be transported without fail and in large quantities by the transport of infrastructure enterprises in order to ensure the uninterrupted operation of every branch of production and the entire national economy, to meet the needs of the population in food and industrial goods. Production of certain products and extraction of raw materials are concentrated in certain regions of Ukraine. Coal, oil, and iron ore are mined in areas where minerals are in the bowels of the earth; agriculture is especially developed in areas with fertile soil and favorable climatic conditions; a large part of manufacturing enterprises are located in large cities.

Some areas of our country, therefore, have a well-known production specialization, the advantage of those industries whose development conditions in this area are most favorable. The task of transport infrastructure is to ensure the connection of all these areas, which complement each other [54]. With a large area of our country have to carry out long-distance transportation from those areas of Ukraine where these products are produced, to all others. Passengers are transported by several types of transport: railways, river and sea routes, motor transport, aviation, individual cargoes - by pipeline transport, as presented in table. 2.4.

Table 2.4

Number of transported passengers by types of transport
public use, million pass. *

Years	Mode of transport					Total
	Railway ¹	Marine	River	Automobile ²	Aviation ³	
2000	498,68	3,76	2,16	2 603,804	1,16	505,77
2001	467,83	5,27	2,03	2 722,001	1,29	476,42
2002	464,81	5,42	2,21	3 069,136	1,77	474,21
2003	476,74	6,93	2,19	3 297,504	2,37	488,24
2004	452,23	9,68	2,14	3 720,326	3,23	467,27
2005	445,55	11,34	2,25	3 836,514	3,81	462,95
2006	448,42	10,90	2,02	3 987,982	4,35	465,69
2007	447,09	7,96	1,85	4 173,033	4,93	461,83
2008	445,47	7,36	1,55	4 369,125	6,18	460,56
2009	425,97	6,22	1,51	4 014,035	5,13	438,84
2010	427,24	6,65	0,99	3726,29	6,11	4167,26
2011	429,78	7,06	0,96	3611,83	7,50	4057,14
2012	429,12	5,92	0,72	3450,17	8,11	3894,04
2013	425,22	6,64	0,63	3343,66	8,11	3784,26
2014 ⁴	389,31	0,03	0,57	2913,32	6,47	3309,69
2015 ⁴	389,79	0,03	0,55	2250,35	6,30	2647,02
2016 ⁴	389,06	0,03	0,45	2024,89	8,28	2422,70
2017 ⁴	164,94	0,03	0,56	2019,32	10,56	2195,41
2018 ⁴	157,96	0,07	0,60	1906,85	12,53	2078,01
2019 ⁴	149,60	0,07	0,57	1804,90	13,71	1968,84

* *Compiled by the authors by*

¹According to PJSC "Ukrzaliznytsia".

²Since 2000 - taking into account the transportation of passengers by small businesses - legal entities and individuals

³Since 2003 - according to the State Aviation Service of Ukraine

⁴Без урахування тимчасово окупованої території Автономної Республіки Крим, м. Севастополя та частини зони проведення антитерористичної операції

In modern conditions, all these modes of transport form a single transport and infrastructure network, are interconnected and are a continuation and complement of each other. However, each mode of transport has the most specific area of activity.

In the transport infrastructure of Ukraine, railways are a universal mode of transport with the widest range of uses for transportation. The total length of the railway network of Ukraine is over 22 thousand km, represented by six railways, covering almost the entire territory of the state [78].

Universality is explained both by some features of our country, and properties of railway transport.

With the current level of development of technical means, railways can be built everywhere and can provide the shortest connection between any point of our country. Water transport does not have such opportunities.

Our sea area of the border is 1355 km. Ukraine has about 150 shipping companies of various forms of ownership. The Black and Azov Seas are an important means of domestic communication for a number of regions of Ukraine. Ukraine's foreign trade also goes mainly by sea, through 18 sea trade ports and 13 port points [66].

Despite this, maritime transport, in the total turnover of the entire transport and infrastructure system, is much inferior to the railways.

River transport is much more important in domestic freight than sea transport. Such rivers as the Dnieper, the Seversky Donets, the Southern Bug, the Dniester, the Danube,

are favorably located in the directions of the main cargo flows of the territory of Ukraine.

Under favorable conditions, water transport of coal, metals, fertilizers and other cargoes can be significantly increased. Many shipments take place in a mixed rail-water connection. Nevertheless, Ukraine's river transport is significantly inferior to rail transport for a number of reasons.

River transport is connected by the natural direction of rivers. The length of Ukraine's river routes is 2.2 thousand km. Navigation on rivers is interrupted every year in winter, which limits the possibility of using the water system as a sustainable mode of transport between individual areas of our country. The volume of traffic on rivers is also much smaller than on railways. One of the reasons for the low load of river infrastructure is also the small number of river ports - eight.

Road transport mainly serves the delivery of goods to stations and piers and transportation from them. Road transport is of great importance in areas where railways or river routes are insufficient. Cars also perform long-distance transportation, serve trunk communications, foreign trade, and carry goods and passengers. The length of the network of public roads in Ukraine is almost 169 thousand km. [207].

Aviation of Ukraine is still a type of transport that develops and carries out only a very small part of especially urgent transport or operates in areas deprived of other routes. Today, Ukraine's air transport and associated ground infrastructure, which, as of January 1, 2020, 18 domestic

airlines, 19 airports and airfields of civil aviation and UkSATSE "UkSATSE", have a significant impact on the development of the passenger market, trade and economics [123].

The location of the railway network on the territory of Ukraine was formed during a long historical process of its development for more than a hundred years and reproduces the division of industry and agriculture.

The densest railway network is located in the central and southern regions of Ukraine. The main railways in this part of the network connect the most important industrial areas.

In some areas, railways were built without sufficient feasibility study or without taking into account the forecast indicators of enterprise development and the demographic situation of the district. As a result, many parallel low-capacity lines have emerged, which are gradually becoming less active sections, and some modes of transport compete with each other.

Rail transport plays an important role in the national economy of Ukraine. The products of transport are the transportation of goods and passengers. The volume of freight traffic is measured by the number of sent tons of performed ton-kilometers. Shipment of goods in tons is a very important indicator of how much of the products of industry and agriculture enters the transport and how much work transport to transport individual goods, according to the current nomenclature. However, the number of tons sent does not yet fully characterize the operation of rail transport.

Of great importance is also the distance of transportation of each ton of cargo, measured by the number of kilometers. The product of the number of transported tons, the distance of transportation of each ton, ie the number of ton-kilometers, determines the total volume of freight work of transport, taking into account the distance of transportation. imilarly, the volume of passenger traffic is measured by the number of passengers carried and the number of passenger-kilometers. The work of railways is many times superior to other modes of transport.

Satisfying the needs of industry and agriculture of the national economy, transport infrastructure promotes the development of production and trade. Of great importance, however, are the quality of transport infrastructure, speed and uninterrupted transportation. The clearer and uninterrupted the transport infrastructure works, transporting goods on time and without delays, the more rhythmically factories and plants work, production is more normal, turnover is faster.

With a large scale of consumption of industrial products, rail transport greatly affects the development of a number of important industries: coal, metallurgy, mechanical engineering, building materials and more. At the same time, the issue of the correct consumption of fuel and materials consumed by rail, all their savings, the use of resource-saving technologies, etc. is of great importance. Rail transport is a complex production organism, all parts of which are in close contact with each other. This connection is manifested both between the branches of the railway industry and between the individual sections of the

railway network scattered for more than twenty thousand kilometers. Thus, the efficiency of locomotives depends not only on their number, capacity and productivity of drivers, but also on a number of other factors - fuel supply, station operation, timely troubleshooting of cars, track condition. In turn, the work of stations, Directorates depends not only on the operators, but also on the locomotive service, which must provide timely locomotives for trains, and on the carriages, which are obliged to keep the cars in good condition, and on the tracks, which include track support. condition that ensures uninterrupted movement of trains on sections.

Thus, the work of all branches of the railway industry is interconnected and mutually conditioned. On the other hand, some sections of railways are quite closely connected in their work. Each section is not an isolated unit, its work affects the operation of neighboring sections, neighboring railways, the entire network. In this respect, the railway infrastructure is very different from the industry. The quality of work of any industrial enterprise may not have any impact on the work of a related, belonging to the same industry. The situation on rail transport is completely different. If any section of the railway, any station works poorly, it affects the work of neighboring stations, sections of the entire railway, and often the entire network as a whole. Some issues of efficient operation of railway transport have been studied by domestic scientists (Fig. 2.3.)

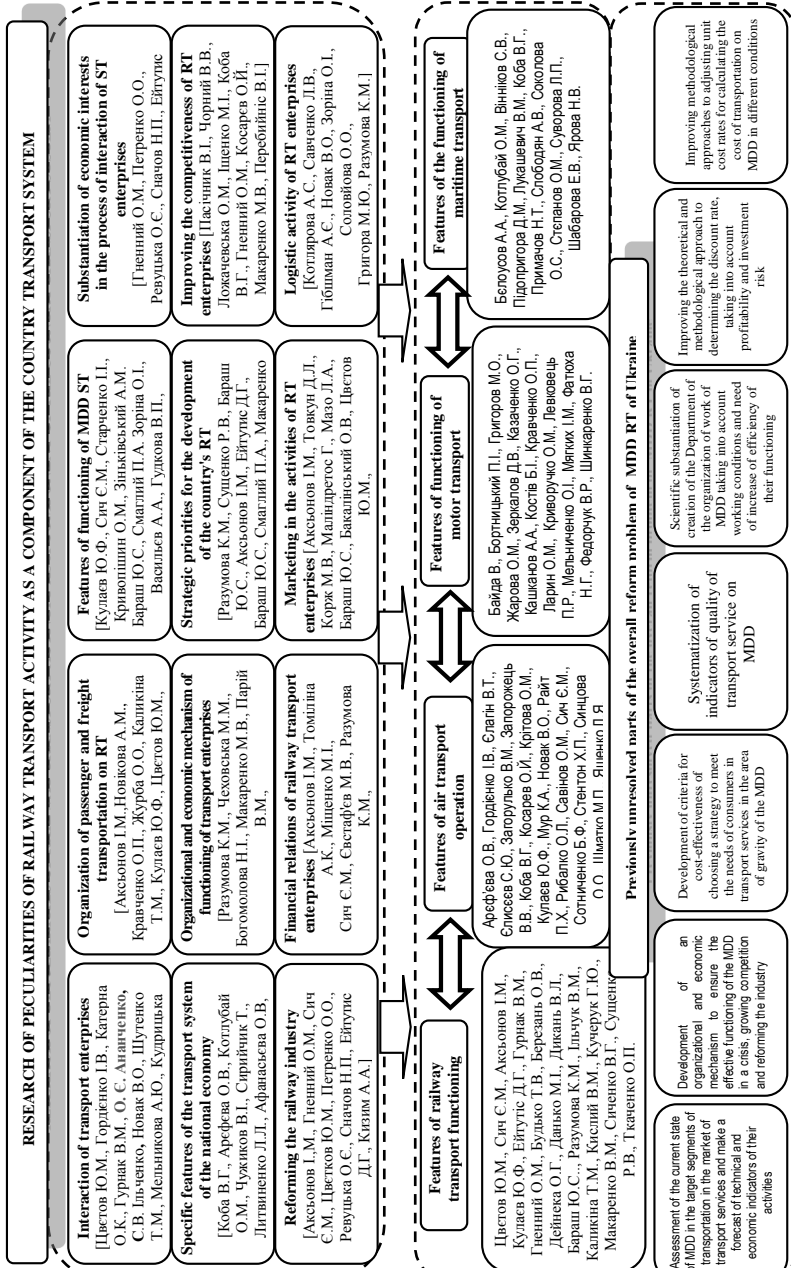


Fig. 2.3. Research of peculiarities of railway transport activity by domestic scientists [76].

The interdependence of the work of all branches of the railway industry and of all parts of the railway network, which is a single whole, a single production organism, requires the centralization of the management of all railway transport and the strictest discipline. Only under this condition the uninterrupted operation of the entire railway system, ensuring maneuverability and full use of all railway resources is possible. In order for the centralized management of railway transport to be truly operational, it is necessary to clearly and precisely follow the orders and directives of all superiors to their subordinates.

At the beginning of the first years of independence, Ukraine faced the need to form its own system of transport and road infrastructure management, coordination of various modes of transport. To this end, at the end of 1992, the Ministry of Transport of Ukraine was established, which united all parts of the transport system and began the formation of state policy in the transport infrastructure sector. The main directions of transport policy from 1992 to the present are the expansion of transport services, improving their quality and efficiency, integration into European and world transport networks, the formation of our country as a transit country, the development of a national network of international transport corridors [80].

Considerable attention was also paid to the creation of its own regulatory framework for the operation of transport infrastructure, ensuring equal market access for all carriers, improving tariff policy, the organization of safe operation of the transport complex.

Transformations in the transport sector of independent Ukraine were closely linked to the European integration vector of public policy. In 1994, the Partnership and Cooperation Agreement was signed with the European Community, which defined the principles of freedom of transit of goods [64].

The results of the study of organizational and legal aspects of integration indicate that the creation and operation of domestic, foreign and international associations of enterprises have identified the main criteria for their classification. These should include: the order of establishment, term of operation, territorial restrictions, the nature of the integration relationship of the members of the association, the presence of specialization of enterprises - the founders of the association, the legal basis for creation and operation.

For example, based on the nature of the integration relationship of the members of the association can be divided into groups of horizontal, vertical, horizontal-vertical and conglomerate associations. Based on the specialization of enterprises - the founders of the association can be divided into specialized associations, associations integrated in the field of sales and financially integrated associations [130]. The classification of types of associations of enterprises on the basis of the proposed criteria allows to justify the choice of form of integration of enterprises, taking into account the peculiarities of world trends and the domestic legal field.

An important task in the field of transport infrastructure is to ensure effective coordination of various modes of transport,

which was achieved, in particular, through the improvement of tariff policy. Due to the application of reduced tariffs for rail transportation and cargo handling in seaports over the past 5 years, the volume of cargo processing increased by more than 70%, including export - by 87%, transit - by 40% [34].

Ukraine's exceptionally advantageous geographical position on the main transit flows between Europe and Asia, the presence of non-freezing seaports, and a developed transport network have led to another important direction of state policy in the field of transport, namely the establishment of our country as a transit state. Since 1998, more than UAH 2.5 billion has been invested in the construction of international transport corridors, a significant number of roads and railways have been reconstructed, and the transshipment complexes of the ports of Illichivsk and Mariupol have been reconstructed [197]. The study of economic and historical principles of formation of transport infrastructure of Ukraine revealed a stable positive dynamics of transportation, which corresponds to the main trends of economic development of Ukraine.

3. PROSPECTS OF DEVELOPMENT OF LITTLE SITES IN THE RAILWAY TRANSPORT SYSTEM OF UKRAINE

3.1. Harmonization of the functioning of the transport system of Ukraine with the European transport legislation

An effectively functioning passenger and freight system is vital for businesses and citizens of the European Union. EU transport policy aims to promote the development of clean, safe and efficient transport throughout Europe. The functioning of transport is the basis for the development of the internal market for goods (their transfer from the place of production to the place of consumption), as well as the right of citizens to move freely within the EU (for work and livelihood).

The European Commission, together with the Directorate-General for Mobility and Transport, is responsible for developing transport policy within the EU. Its task is to ensure the mobility of the single European transport area, taking into account the needs of the population, environmental policy and competitiveness. It is aimed at [257, 38, 39, 98]:

- the development of the European internal market by ensuring the full integration of all modes of transport into a single, competitive transport system;
- development of innovations: promoting the development of a new generation of sustainable transport technologies, in particular, for integrated traffic management systems;

– construction of a trans-European network as the basis of a multimodal sustainable transport system capable of providing fast, affordable transport services.

The European Commission's White Paper entitled "European transport policy for 2010: time to decide" (COM (2001)) was the basis for a sustainable EU transport policy.

It was supplemented in June 2006 by the document "Development of sustainable mobility for our continent" (COM (2006) 314). Based on the White Paper of 2001, the European Commission has developed and implemented a number of plans on key transport policy issues, including: Green Paper on Urban Transport (COM (2007) 551; Green Transport (COM (2008) 433); - Logistics in Action "(COM (2007) 607) and "Maritime Transport Strategy until 2018 (COM (2009) 8) [232].

By the end of the 10 - year period since the adoption of the White Paper, the European Commission has adopted a Directive entitled "A sustainable future for transport" (COM (2009) 279). This Directive is of a consultative and strategic nature. It describes the challenges that EU transport will face in the coming years: the need to reduce greenhouse gas emissions, growing demand for exhaust fuel, increasing congestion in many European cities, airports and ports.

Based on this, in March 2011 the European Commission adopted a White Paper entitled "Roadmap to a single European transport area - to a competitive and efficient transport system" (COM (2011) 144). This comprehensive strategy contains 40 concrete initiatives for the next decade to build a competitive

transport system that aims to increase mobility, remove major barriers, and stimulate economic growth and employment. Some of these initiatives relate to a specific mode of transport, such as the formation of an internal market for rail services.

Freight is the focus of many initiatives, including road freight. Initiatives are also specific to passenger transport, for example, achieving a high level of passenger safety with maximum passenger comfort. The proposals, aimed at reducing dependence on oil imports and reducing carbon dioxide emissions from transport by 60%, are designed for the period up to 2050. The strategy sets different goals for different distances - intra-urban, inter-city, long-distance travel. The main goals for 2050 are as follows:

- ensuring 40% of the use of low-carbon fuels in aviation; and reducing at least 40% of relocation emissions;
- transfer of 50% of long-distance passenger and freight flights from road to rail and water transport;
- reduction of harmful emissions of vehicles by the middle of the century by 60%.

In October 2013, the European Commission put forward proposals for a new transport infrastructure policy, with the task of forming a core network by 2030. It is planned that the transport network will include nine main transport corridors: two North-South corridors, three East-West corridors and four diagonal corridors.

The core network will connect:

- 94 main European ports with railways and highways;
- 38 key airports in major cities;
- 15,000 km of high-speed railway lines.

This policy aims to address bottlenecks, optimize cross-border cross-border operations for passengers and businesses across the EU, improve links between different modes of transport, and promote the EU's climate protection goals.

In the field of rail transport, in November 2012 the European Parliament and the Council adopted Directive 2012/34 / EU on the establishment of a single European railway area. It aims to consolidate and consolidate existing access legislation in the transport market (the first package of Railway Directives). This Directive simultaneously simplifies the legal framework, clarifies some provisions and restores the regulatory framework. In particular, it seeks to cover issues related to the financing of railway infrastructure, market competition and organizational reforms for market surveillance [257].

The next legislative initiative was the adoption by the European Commission in January 2013, the fourth railway package to promote the development and competitiveness of railways in Europe (COM (2013) 25). The initiatives presented in the package are complementary and seek to contribute to a more efficient and investment-attractive railway sector compared to other modes of transport.

The package contains legislative proposals to amend:

- Directive 2012/34 / EU of the European Parliament and of the Council of 21 November 2012 on the establishment of a single European railway area;

- Regulation (EU) № 1370/2007 of the European Parliament and of the Council of 23 October 2007: "Public passenger transport services by rail and by road";

- Regulation (EU) № 881/2004 of the European Parliament and of the Council of 29 April 2004 establishing a European Railway Agency;

- Directive 2004/49 / EC of the European Parliament and of the Council of 29 April 2004 on safety on the Community's railways;

- Directive 2008/57 / EC of the European Parliament and of the Council of 17 June 2008 on the compatibility of the rail system within the Community.

Active globalization processes taking place in the world economy lead to the establishment of a close political dialogue between individual countries and regions of the world, the deepening of international economic ties and the development of world trade. The process of liberalization that unfolded in world trade in the postwar period, provided a sharp increase in its volume. Since 1950, world exports have increased 19 times, and production has increased 7.2 times. At the same time, world exports of industrial goods increased 38 times, production - 11 times.

There is a tendency to increase the dependence of most countries on foreign trade [41, 231].

The objective processes of globalization of the world economy form a new logic of global rules for companies operating in the market. As firms increasingly internationalize the production and distribution of goods and services, the economies of individual countries are becoming increasingly integrated.

Therefore, the domestic national and economic goal is precisely the ability to harmonize the basic mechanisms of governance with the world trade system to ensure sustainable development. In a world where individual states are increasingly dependent on the state of the entire economic system in their economic development, each country plays a role in solving global economic problems. Therefore, the Government announced the direction of integration into the European Union.

European integration and membership in the European Union is a strategic goal of Ukraine, and the most effective, best way to realize national interests is to build an economically developed and democratic state, strengthening its position in the world system of international relations [233].

The most expedient way of development of modern Ukraine is European integration. Powerful European states are locomotives that will create conditions for the renewal of human, technical and technological resources of the national economy. Domestic products will be competitive not only in domestic but also in international markets.

International cooperation and economic relations with the EU will contribute to the rational allocation of resources, increase the efficiency of economic processes.

An important priority for Ukraine is to achieve the appropriate technological level, which determines the direction and scale of the dynamics of the world economy. The European Community is Ukraine's main trading partner outside the CIS. The growth of foreign trade and the deepening of political ties, the ever closer integration of Ukraine with European structures testify to the real progress and extraordinary potential of this cooperation.

The development of integration processes in Europe means an increase in the openness of the national economy and competition on the part of European Community firms. The potential benefits and advantages of European integration outweigh the possible losses and risks [177].

After the signing of the Partnership and Cooperation Agreement in June 1994, Ukraine's relations with the European Community have developed qualitatively new. It regulates the main aspects of relations between Ukraine and the EU, namely: trade liberalization; development of entrepreneurial and investment activity; cooperation in economic, social, financial and scientific spheres; approximation of Ukrainian legislation to EU legislation and international standards; technical cooperation; political dialogue, development of the transport system. The countries of the European Community consider Ukraine as a serious trade partner.

Confirmation of this fact is the Community-approved Cooperation Plan with our country. The Decree of the President of Ukraine of September 14, 2000 "On the Program of Ukraine's Integration into the European Union" became an important step in the internal support of the country's course towards European integration.

The conclusion of the Association Agreement for Ukraine is, at this stage, the main step in rapprochement with the European Union, as it will mark the transition of cooperation with the EU to a qualitatively new level of political association and economic integration. This document, in its content, has no analogues between similar agreements concluded by the European Union with other states.

The main value of this Agreement is that it is a guideline in the implementation of comprehensive internal transformations in Ukraine.

At the same time, with the signing of the Association Agreement, our state agrees with clear obligations regarding the adaptation of domestic legislation to EU legislation. In this regard, we are waiting for hard work on the adoption of laws and regulations necessary to ensure the implementation of the Agreement.

Given the scale of the tasks, it is necessary to implement the relevant legal framework for its implementation today. It is necessary to develop a national mechanism for the implementation of the Association Agreement, including the creation of an effective system of coordination of this process

and the preparation of an appropriate program for the implementation of the Agreement.

The conclusion of the Association Agreement between Ukraine and the EU opens the way for the introduction of mutually beneficial economic cooperation, which will contribute to the economic growth of the national economy of Ukraine and increase the welfare of the population.

Given the high standards and technical requirements of the EU market, the standards of Ukrainian production will also increase, which will have a positive impact on strengthening the competitiveness of the national economy and the export competitiveness of domestic goods both directly to the EU and other foreign markets. The Association Agreement should create a deep and comprehensive free trade area that will integrate Ukraine's economy into the European Community market.

Favorable geographical position of Ukraine as a transit country determines its importance for the economies of neighboring countries. Ukraine is actively developing cooperation with existing regional organizations and structures - the Central European Initiative, the Black Sea Economic Cooperation Organization, the Council of the Baltic Sea States, etc. The important role of Ukraine as a connecting link between the enlarging EU and the Black Sea-Caspian region is difficult to overestimate. The economic core of cooperation will be the implementation of the "Project of the XXI Century" - the transportation of Caspian oil through the territory of Ukraine to Europe.

Together with the project of the Eurasian transport corridor and the transport corridor between the Baltic and Black Seas, this is a real way to create a fundamentally new geoeconomic situation in the XXI century.

The integration of oil and gas pipeline systems with the aim of more efficient development of oil and gas transportation is very important for both Ukraine and European countries.

As the current Partnership and Cooperation Agreement stipulates that mutual trade between Ukraine and the EU must be based on the principles and norms of the World Trade Organization, accession to it is an important prerequisite for Ukraine's associate membership in the EU.

Today Ukraine has achieved certain results in trade liberalization, in accordance with WTO rules:

- the planned system of production and distribution was eliminated;
- the state monopoly on foreign trade was abolished;
- liberalized prices; the market exchange rate is used.

Freedom of movement is one of the most significant achievements in the history of the EU and a necessary condition for the spread and rooting of common values on the European continent. The free movement of goods and services between Ukraine and the EU should be ensured by a free trade area. New conditions will be created for our state's access to advanced European technologies and investment attraction.

Ukrainian companies will have the opportunity to increase exports, which will lead to the creation of new jobs and increase the work of transport infrastructure.

The introduction of a visa-free regime for our citizens to travel to the European Union will also improve the work of transport. That is why ensuring the proper implementation of the provisions of the Action Plan on visa liberalization by the European Union for Ukraine is one of the main priorities of the Ukrainian authorities.

The signing of the Agreement on Amendments to the Visa Facilitation Agreement between Ukraine and the EU on July 23, 2012 was an important step in this direction.

Positive prospects for the development of trade relations between Ukraine and the EU indicate the recovery of macroeconomic indicators after the recession of 2009. The volume of trade between Ukraine and the EU has in fact already reached pre-crisis levels and continues to grow.

Today's stage of development of the European integration project is at an important stage of development. Favorable political conditions for deep institutional transformations in the EU and the Eurozone are being established. The Member States of the European Union are faced with the need to make political decisions, without exaggeration, of a fundamental nature. The successful exit of the European Union from the crisis, while preserving its integrity, will mean further deepening of political and economic integration, including in the direction of Ukraine.

The interests of the national economic complex of Ukraine are to combine the European integration direction with the consistent realization of their own national interests in the Eurasian direction, the active use of the formats of the Commonwealth of Independent States, as well as the intensification of bilateral relations.

Having formed the direction of development on the European course as the main one, the Ukrainian state does not reduce the attention to the Eurasian direction as an important sphere of national interests. At the same time, the issues of Ukraine's participation in the Eurasian integration project should be resolved taking into account the obligations of our state in accordance with the Protocol on Accession to the WTO and the draft Association Agreement with the European Union. At the same time, we consider the CIS Free Trade Agreement signed at the end of 2011 as an important and significant step forward in the further development of trade, economic, scientific and technical cooperation between Ukraine and the Russian Federation.

Ukraine views this Agreement as a real step in overcoming trade restrictions, although the presence of numerous restrictions significantly reduces its effectiveness.

A constructive search for a mutually acceptable regime of trade and economic relations between Ukraine and the countries of the Customs Union, which would allow to maintain trade volumes and implement joint production projects, is an urgent

and important task of the Ukrainian authorities. Integration processes in the post-Soviet space are a manifestation of the global trend of increasing the number of regional integration associations and trade unions. It is important for Ukraine to fully participate in these processes, offering its own vision of the development of its relations with the Customs Union, in the context of the Common Economic Space and the formation of the Eurasian Union - on the one hand, and the invariability of its own course of integration into the European Union.

The formation and implementation of new forms of cooperation with Ukraine and with the integration structures that already exist and are being created in the post-Soviet space, and with the European Union and its associated countries will allow Ukraine to become the initiator of formats rather than consumers of proposed projects. The uniqueness of Ukraine's experience, in this case, is that many of these issues have already been addressed during the preparation of the Association Agreement with the EU.

It is the Black Sea region that has a very great potential for further development of Ukraine.

It is not only an important crossroads of transport routes, but also an energy treasury of future generations. The importance of the Black Sea region as an important energy transit corridor is constantly growing.

Our state must play an important role in the Central Asian region, ensuring its strategic, energy and economic interests there.

Ukraine's foreign policy in the Eurasian direction requires taking into account the political and economic opportunities of such influential countries as Russia and China, as well as the positions of the United States and the European Union. Practical results of cooperation will be the best criterion of efficiency of the corresponding foreign policy course of Ukraine [159].

The current situation requires Ukraine to cooperate more widely and meaningfully with foreign partners, primarily in the economic direction.

The support of Ukraine by the countries of Central and Eastern Europe is especially important. The importance of relations between Ukraine and its European neighbors - Poland, Slovakia, Hungary and the Czech Republic - is confirmed by economic indicators, active regional and cross-border contacts. However, it is obvious that cooperation between Ukraine and its neighbors has significant unrealized reserves.

3.2. Development of the transport system of Ukraine taking into account the strategic priorities of the national economy: methodological principles and prospects

Significant positive changes that took place during 2012-2016 in the development of transport infrastructure, significantly expanded the material and technological prerequisites for effective development of the industry, helped to overcome a number of infrastructural "bottlenecks" that hampered the processes of economic development. Meanwhile, the

continuation of technological renewal should be combined with the spread of organizational modernization, adaptation of the transport sector to the conditions of competitive activity in the post-crisis domestic and global economy [162, 178].

Due to the presence of systemic imbalances in the transport sector, the costs associated with non-compliance with traffic safety and environmental safety, reduced reliability of the transport system, deteriorating quality of transport services of domestic enterprises and the population, there are trends of reorientation of transit flows in bypassing Ukraine. Given the significant role of the transport sector in ensuring the efficient functioning and competitiveness of the national economy, the active continuation of modernization processes in this area is considered one of the main directions of public policy at the present stage.

The purpose of reforming the transport and road complex, in the context of the country's interior, is to create a comprehensive transport infrastructure that would not only adequately meet the needs of society in the transportation of passengers and goods, reduce transport costs, using economically reasonable tariffs, but also would ensure the effective realization of Ukraine's transit potential [166].

In the field of development of the transport and road complex, aimed at meeting the needs of economic development and improving the quality of life of citizens, the priority areas for 2017-2020 should be: creating a new system of bodies responsible for management and development of transport and

road complex on various modes of transport.

It is necessary to lay the foundations of state regulation of the activities of natural monopolies in the field of transport and to create a National Commission for state regulation in the field of transport; development and improvement of the legal basis for further implementation of reforms in the field of transport, first of all, harmonization of standards in the field of transport with EU standards, improving transport safety and quality of services provided during cargo delivery and passenger service, reforming the tariff system for transport services; implementation of projects of national importance for the development of transport infrastructure, including the use of resources of international financial organizations, international technical assistance and funds of private investors.

In view of the above, it is concluded that the main tasks of the development of the transport sector in Ukraine in the post-crisis recovery should be as follows (fig. 3.1).

Revealing the main components of the development of the transport sector in Ukraine, the authors summarize and propose the main objectives of sectoral transport modernization (Fig. 3.2), ways to attract foreign investment to ensure structural transformations in the transport sector (Fig. 3.3) and the main measures for public-private partnership for the accumulation of financial resources in the development of transport infrastructure (Fig. 3.4).

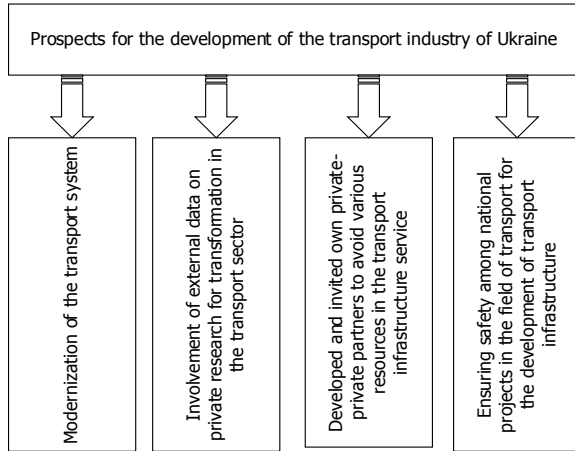
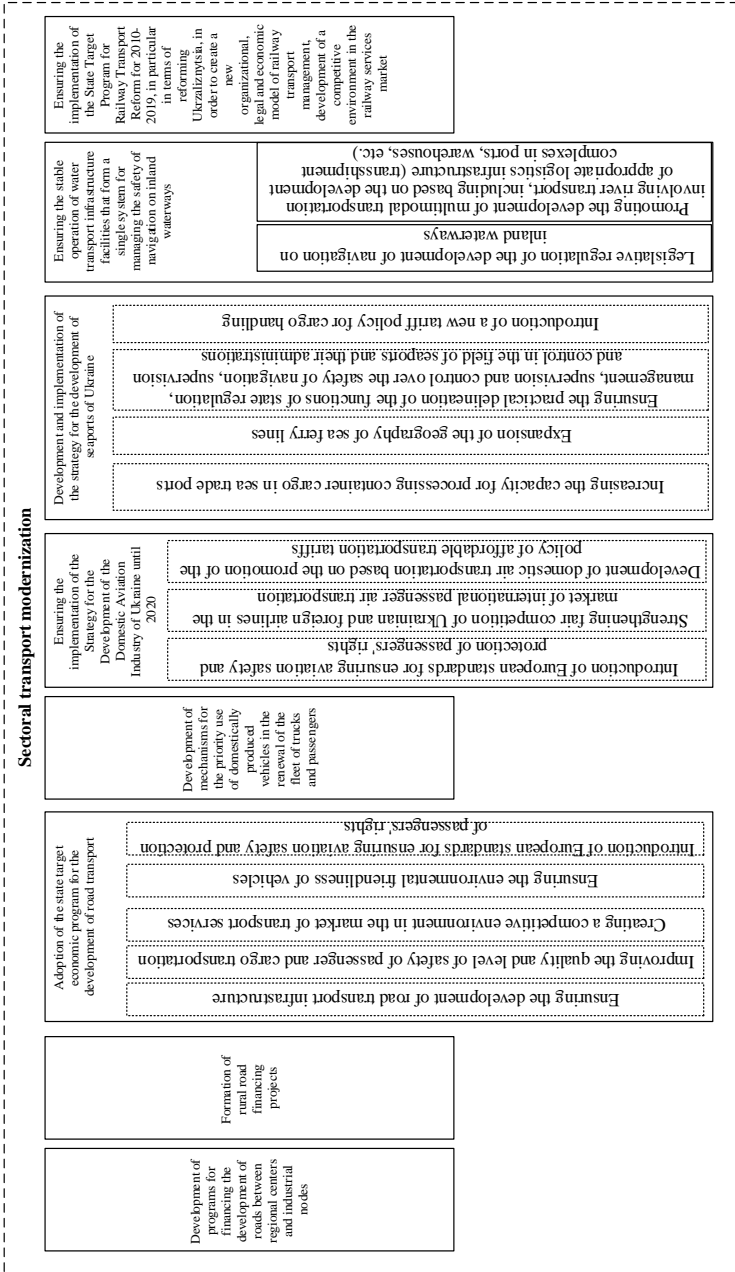


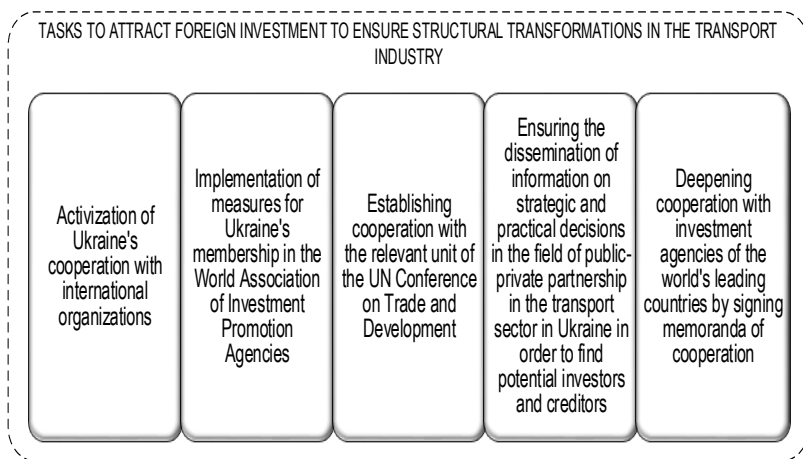
Fig. 3.1. The main tasks of the transport industry development in Ukraine *

* Compiled by the authors by [76]

To ensure further implementation of national projects in the transport sector, it is necessary to form and update a list of priority projects of national importance for the development of transport infrastructure; to ensure the implementation of decisions adopted by the Resolution of the Cabinet of Ministers of Ukraine "Some issues of the project" Infrastructure facilities of the Kyiv region "of September 19, 2011 № 982 in terms of compliance with implementation deadlines set by feasibility studies of project participants; to take measures aimed at identifying barriers and problems of investment in Ukraine and to promote their solution, with the involvement of industry domestic and international experts, in particular, conducting road shows abroad, some media campaigns in Ukraine, improving the web portal as an effective tool influence, informing and providing services to investors; to ensure the implementation of agreements with the Chinese side on the implementation of the national project "Air Express".



*Fig. 3.2. The main tasks of sectoral transport modernization in Ukraine * [76]*



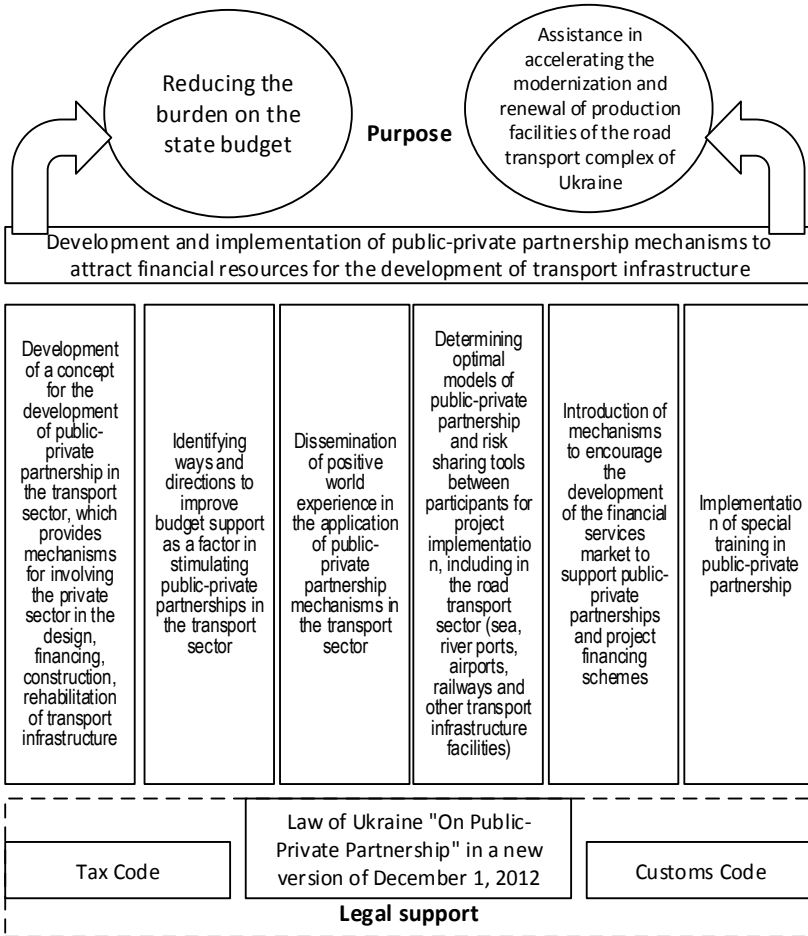
*Fig. 3.3. Ways to attract foreign investment to ensure structural transformations in the transport sector **

**Composed by the authors by [76]*

The transport and road sector of Ukraine's economy is one of the most important components of the country's socio-economic system [280].

The transition of the economy to an intensive type of development and adherence to the policy of integration into the European Union requires adequate decisions on the development of the transport and road sector in the long run.

The Government of Ukraine by the order of October 20, 2010 № 2174-r approved the Transport Strategy of Ukraine for the period up to 2020 - a comprehensive systemic document on the further development and functioning of the transport sector of Ukraine's economy, expansion of international transport links, effective use of transit potential, carrying out structural reforms in transport.



*Fig. 3.4. The main measures for the introduction of public-private partnership mechanisms for the accumulation of financial resources in the development of transport infrastructure **

* *Composed by the authors by [76]*

The management system of railway, sea and road transport, road management needs to be reformed. The level of transportation safety is low. Road accident rates are much worse than in the EU. Planes of domestic airlines have repeatedly been included in the "black list" of airlines that are prohibited from flying to EU countries.

Due to unsatisfactory navigation safety management, the State Flag of Ukraine is included in the "black list" of the Paris Memorandum.

The purpose of the Strategy is to determine the conceptual foundations for the formation and implementation of state policy to ensure stable and efficient operation of the transport sector, creating conditions for socio-economic development of the country, increasing the competitiveness of the national economy and living standards [54].

Principles of development and implementation of the Strategy:

- transport services, especially rail, should be accessible (economically), taking into account people on the brink of poverty and inclusive people;
- coordination of plans for the development of transport infrastructure with the general scheme of planning the territory of Ukraine, plans for the use of land resources;

- implementation of strict antitrust policy; liberalization of pricing in the market of transport services; operation of transport enterprises on a self-sustaining basis;

- development of measures to motivate the use of different modes of transport that are lenient with the environment;

- strict monitoring system in the transport sector of mandatory compliance with environmental safety standards and regulations;

- the focus in the allocation of investment resources is on the implementation of goals and objectives of improvement and development of all aspects of the transport system.

The main directions of the Strategy implementation are:

- development of transport infrastructure by ensuring the development of the network of highways, first of all, highways and bypasses of settlements;

- increasing the capacity of the main railway lines, transport hubs, railway and road entrances to seaports, the road network of large cities; modernization of industrial railway transport;

- construction and reconstruction of bridges in the cities of Kyiv, Dnipropetrovsk, Zaporizhia, Mykolayiv and Kherson;

- construction and reconstruction of terminals, first of all, containers in seaports;

- creation of a network of logistics centers.

Renewal of transport by forming a rational structure of the rolling stock must be carried out taking into account the capacity, load capacity, passenger capacity, specialization of vehicles; implementation of vehicles, service, technical and economic performance of which meet modern European requirements for safety, environmental friendliness and energy efficiency of transport [109, 128].

Substantiation of the need to improve the investment climate by creating favorable conditions to ensure the attractiveness of the transport industry to attract investment is presented in Fig. 3.5.

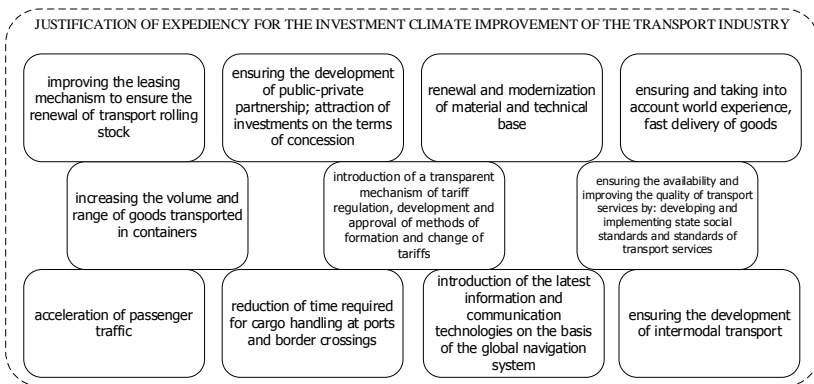
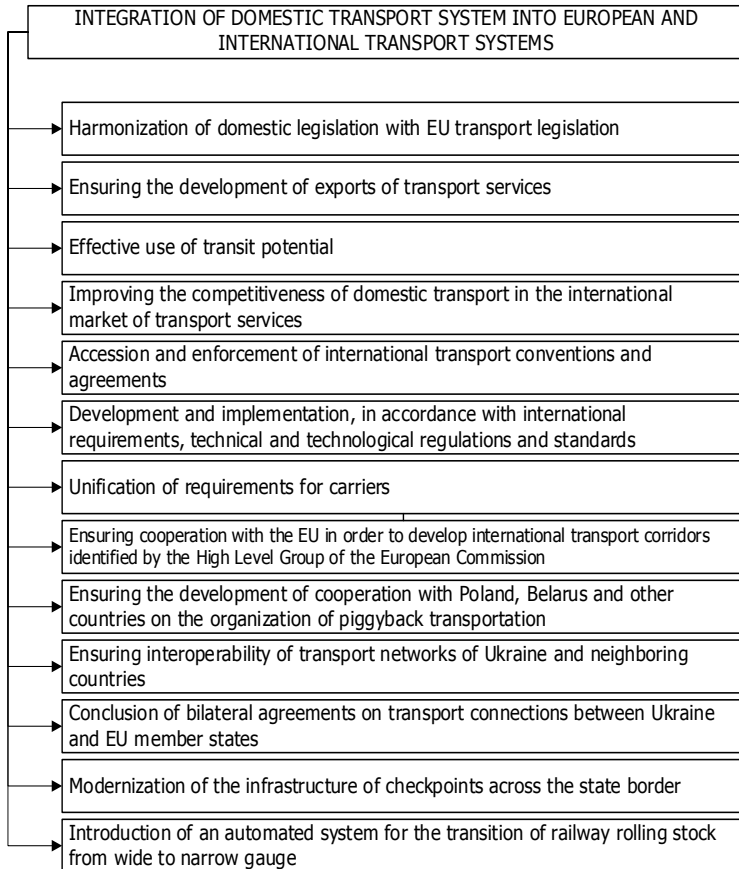


Fig. 3.5 Justification of expediency of creation of favorable conditions for attraction of investments in the transport branch of Ukraine *

* *Combined by the authors by [76]*

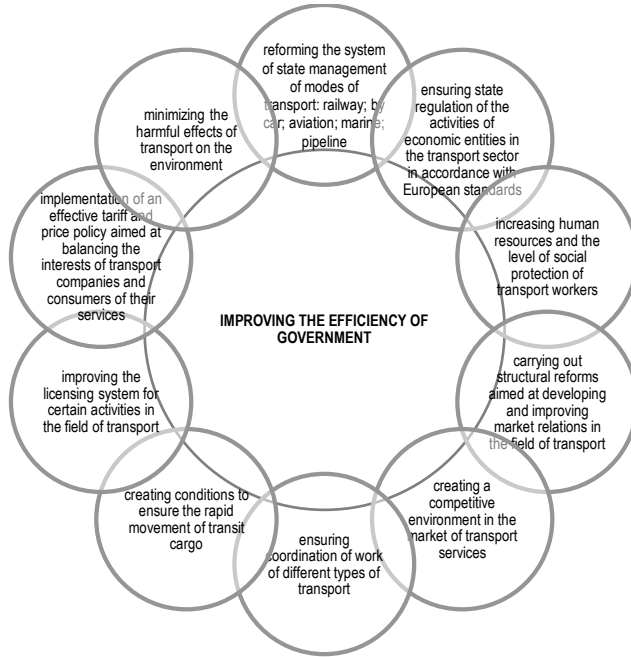
Generalized ways of integration of the domestic transport system into the European and international transport systems of development are presented in Fig. 3.6.



*Fig. 3.6. Ways of integration of the domestic transport system into the European and international transport systems **

** Combined by the authors by [76]*

The conducted researches allowed to define concrete steps which realization is capable to provide increase 3.7.



*Fig. 3.7. Improving the efficiency of public administration in the field of transport **

** Combined by the authors by [76]*

3.3. Strategy of development of low-activity sections in the railway transport system of Ukraine

Low-activity sections have been in the center of attention of specialists throughout the formation of the transport system. The problems of their maintenance and operation went beyond

purely technical issues. At the beginning of the development of railways, inactive sections were operated for the transportation of products, mainly agriculture. An extensive network covering the main areas of migration of agricultural labor, grain routes, etc. provided at one time a significant amount of freight and passenger traffic.

In pre-revolutionary times, they were used to deliver military equipment and army formations to the front lines, because there were no alternative modes of transport at that time. Modern idle sites at that time served as a combination of agricultural regions with the main railway network, meeting the needs of enterprises that extracted minerals with processors of their products.

Based on the above, the degree of branching of lines and directions of railway transport of Ukraine is directly dependent on the action of certain guiding factors. This gives impetus to their study, which opens the possibility of determining the fundamental need to maintain inactive areas, taking into account their importance in the socio-economic life of individual regions of Ukraine [323, 325].

An important reasonable factor in the feasibility of these sections is the saturation of the territory of the regions by road. A significant amount of work of inactive sections is to ensure the transport accessibility of certain areas of accumulation of passenger traffic. These are remote areas from the main lines, where railway transport, its inactive directions, taking into account the natural, climatic and geographical features, is almost

the only means of transport. In deciding the fate of inactive railways, the guiding factor may be the profitability indicator, which can be taken into account along with other technical, economic and social and will play the role of an integrated factor in calculating the effectiveness of decisions.

Analysis of the form of statistical reporting CO-4, shows that a significant number of them (up to 15.21% of the network length, Table 3.1) the number of freight trains does not exceed 1-2 per day.

Table 3.1

Number of low-activity sections on railway transport *

Name of regional branches of railways	S -1		S -2		S -3		S -4		S -5		Total		Specific weight LA.
	Total	LA	Total	LA	Total	LA	Total	LA	Total	LA	Total	LA	
Prydniprovskia	20	1	18b	1	15	2	13	0	0	0	66	4	6,06
South	5	2	22	1	5	1	16	0	7	0	55	4	7,27
South-West	19	3	23	8	24	3	14	2	19	9	99	25	25,25
Odessa	44	2	19	11	19	0	14	2	0	0	96	15	15,63
Lviv	32	6	15	1	22	5	31	6	18	0	118	18	15,25
PJSC "Ukrzaliznytsia"	120	14	97	22	85	11	88	10	44	9	434	66	15,21

Generalized by the authors by [76-80]

* - transportation on the territory of the CAR and Donetsk railway is not taken into account in connection with the military events in eastern Ukraine.

The presented indicators show that for 15.21% of the operational length of the railway network of Ukraine the justification of the feasibility of low-level railways should be based on calculations of income and costs and the resulting indicator - profitability of sections for 2016 (Tables 3.2 - 3.6), as well as in the case of negative results. - the possibility of their development by other modes of transport by calculating revenues and costs for the carriage of goods and passengers and for the maintenance of railway infrastructure in these areas.

A specific feature of the operation of low-activity sections is locomotive traction. Almost eighty percent of freight turnover is due to expensive and non-environmentally friendly diesel traction. Trunk locomotives are often used. The cost of transportation increases significantly. But with low solvency of cargo owners, tariffs become uncompetitive. And this is a problem that goes beyond the national and economic level in terms of its significance and scale.

Table 3.2

Calculation of profitability of low-activity sections of the Prydniprovsk railway *

№ s/n	The name of the railway section	Direction	The length of the section, km	The reduced turnover, thousand t-km	Annual income from transportation, total, thousand UAH	Annual maintenance costs (electricity, salary, materials, infrastructure maintenance) thousand UAH							Profitability
						S	R	C	E	BMES	T	total	
1	Apostolove - Surske	C	139,3	7682,85	11435,5	2097,9	4795,2	440,1	136,1	87,4	568,8	8125,4	0,4074
		P	139,3	6994,63	10411,2	1909,9	4365,6	400,6	123,9	79,6	517,8	7397,5	0,4074
2	Novomoskovsk - Krasnograd	C	98,5	1252,00	5797,9	1805,2	4464,4	829,3	218,6	53,9	950,4	8321,8	-0,3033
		P	98,5	890,00	4121,5	1283,3	3173,6	589,5	155,4	38,3	675,6	5915,7	-0,3033
3	Fedorivka - Komysh Zorya	C	129,2	20315,05	9313,6	2430,0	5541,5	639,0	818,5	178,8	797,8	10405,7	-0,1049
		P	129,2	10809,04	4955,5	1292,9	2948,5	340,0	435,5	95,2	424,5	5536,5	-0,1049
4	Mechetna - Polohy - Berdyansk	C	183,7	6599,29	21667,8	3920,1	4450,0	766,8	750,8	190,6	911,0	10989,3	0,9717
		P	183,7	2058,22	6757,9	1222,6	1387,9	239,2	234,2	59,4	284,1	3427,4	0,9717
Total by railway			1101,4	56601,10	74460,9	15961,9	31126,7	4244,5	2873,0	783,2	5130,0	60119,3	0,2386

* Generalized by the authors by [76-80]

Table 3.3

Calculation of profitability of low-activity sections of the South railway.*

№ s/h	The name of the railway section	Direction	The length of the section, km	The reduced turnover, thousand t-km	Annual income from transportation, thousand UAH	Annual maintenance costs (electricity, salary, materials, infrastructure maintenance) thousand UAH							Profitability
						S	R	C	E	BMES	T	total	
1	Osнова - Kharkiv Levada	C	6	51	62,3	10,8	8,1	17,2	72,4	108,0	100,9	317,4	-0,8037
		P	6	2	4,8	3,2	4,8	2,3	2,8	8,9	12,3	34,3	-0,8602
2	Industrial - Kharkiv Balashovsky	C	10	61	48,5	52,3	16,1	34,4	144,3	215,3	201,2	663,5	-0,9269
		P	10	1536	2856,3	1832,6	404,8	865,4	3632,5	5421,6	5066,4	17223,2	-0,8342
3	Ilek-Penkovka - Bass	C	49	53	61,2	43,5	68,4	146,3	614,2	916,7	856,6	2645,6	-0,9769
		P	49	707	800,2	1403,6	912,9	1951,9	8192,7	12227,8	11426,8	36115,7	-0,9778
4	Lokhvytsia - Gadyach	C	43	264	568,4	190,0	299,1	639,6	2684,6	4006,9	3744,4	11564,7	-0,9509
		P	43	436	1253,6	562,3	494,0	1056,3	4433,7	6617,4	6183,9	19347,7	-0,9352
Total by railway			216,0	3110,0	5655,3	4098,3	2208,3	4713,6	19777,0	29522,5	27592,6	87912,2	-0,9357

* Generalized by the authors by [76-80, 203]

Table 3.4

Calculation of profitability of low-activity sections of the South-West railway*

№ s/n	The name of the railway section	Direction	The length of the section, km	The reduced turnover, thousand t-km	Annual income from transportation, total, thousand UAH	Annual maintenance costs (electricity, salary, materials, infrastructure maintenance) thousand UAH						Profitability	
						S	R	C	E	BMES	T		total
1	Borshchahivka - Kyiv Oktyabrsky	C P	4 4	152 891	218,6 789,6	210,3 1200,8	16,0 93,9	34,3 200,8	143,8 842,8	214,6 1258,0	200,5 1175,6	819,5 4771,9	-0,7333 -0,8345
2	Buyan - Spartak	C P	17 17	348 128	920,1 325,9	99,0 36,4	155,9 57,3	333,3 122,6	1399,1 514,6	2088,1 768,1	1951,4 717,7	6026,8 2216,8	-0,8473 -0,8530
3	Zhidimichi - Zhukotki	C P	20 20	129 24	62,8 15,6	43,2 8,0	68,0 12,6	145,4 27,0	610,1 113,5	910,7 169,4	851,0 158,3	2628,3 489,0	-0,9761 -0,9681
4	Trilesi - P. 8 km	C P	8 8	718 1371	653,8 1256,3	96,1 895,6	151,4 289,0	323,6 618,0	1358,4 2593,8	2027,4 3871,3	1894,6 3617,7	5851,6 11885,5	-0,8883 -0,8943
5	Pogrebyshe 1 - Pogrebyshe 2	C P	20 20	2 12	4,9 11,8	0,7 4,0	1,1 6,3	2,3 13,5	9,5 56,8	14,1 84,7	13,2 79,2	40,7 244,5	-0,8798 -0,9517
6	Lanovtsy - Shepetovka Podolskaya	C P	89 89	1106 2062	1600,7 2356,3	1647,6 3071,7	2593,9 4836,1	5546,2 10340,2	23278,5 43399,8	34743,8 64775,6	32467,9 60532,4	100277,9 186955,8	-0,9840 -0,9874
7	Slavuta 2 - Baraniv	C P	8 8	815 325	41,7 16,6	109,1 43,5	171,8 68,5	367,4 146,5	1541,9 614,9	2301,3 917,7	2150,6 857,6	6642,1 2648,7	-0,9937 -0,9937
8	Andrushevka - Brovki	C P	22 22	124 35	98,7 42,1	45,7 12,9	71,9 20,3	153,7 43,4	645,1 182,1	962,9 271,8	899,8 254,0	2779,1 784,4	-0,9645 -0,9463
9	Kashperovka - Slobodsky Post	C P	6 6	16 41	12,3 38,6	1,6 4,1	2,5 6,5	5,4 13,9	22,7 58,2	33,9 86,8	31,7 81,1	97,8 250,6	-0,8742 -0,8460

№ s/n	The name of the railway section	Direction	The length of the section, km	The reduced turnover, thousand t-km	Annual income from transportation, total, thousand UAH	Annual maintenance costs (electricity, salary, materials, infrastructure maintenance) thousand UAH							Profitability
						S	R	C	E	BMES	T	total	
10	Ashtray - Skvira	C	30	281	402,0	141,1	222,1	475,0	1993,6	2975,5	2780,6	8687,9	-0,9532
		P	30	547	589,7	274,7	432,4	924,6	3880,8	5792,2	5412,8	16717,4	-0,9647
11	Tarashta - Rakitno	C	21	1	3,2	0,4	0,6	1,2	5,0	7,4	6,9	21,4	-0,8504
		P	21	57	62,3	20,0	31,5	67,4	283,1	422,5	394,8	1219,4	-0,9489
12	Kalinovka 2 - Varshitsa	C	6	922	322,5	92,6	145,8	311,7	1308,3	1952,6	1824,7	5635,6	-0,9428
		P	6	212	87,1	21,3	33,5	71,7	300,8	449,0	419,6	1295,8	-0,9328
13	Voronkovtsy - Starokonstantinovo 2	C	12	45	44,8	9,0	14,2	30,4	127,7	190,6	178,1	550,1	-0,9186
		P	12	708	902,6	142,2	223,9	478,7	2009,2	2998,8	2802,4	8655,2	-0,8957
14	Kalinovka 1 - Turbov	C	20	166	405,1	55,6	87,5	187,1	785,1	1171,8	1095,1	3382,2	-0,8802
		P	20	162	389,6	54,2	85,4	182,6	766,2	1143,6	1068,7	3300,7	-0,8820
15	Zhytomyr - Fastov 1	C	101	176	322,2	297,5	468,4	1001,6	4203,8	6274,3	5863,3	18109,0	-0,9822
		P	101	4	2,6	6,8	10,6	22,8	95,5	142,6	133,3	411,6	-0,9937
16	Novograd Volynsky - Zhytomyr	C	91	413	786,3	629,1	990,4	2117,6	8897,9	13265,5	12396,6	38287,0	-0,9795
		P	91	427	801,2	650,4	1024,0	2189,4	9189,2	13715,2	12816,8	39584,9	-0,9798
17	Vorogba - 209 km /gr	C	13	117	156,2	25,5	40,1	85,7	359,7	536,9	501,7	1549,5	-0,8992
		P	13	38	42,3	8,3	13,0	27,8	116,8	174,4	162,9	503,3	-0,9159
18	Glukhovo - Makovo	C	32	172	480,5	92,1	145,0	310,1	1301,6	1942,7	1815,5	5607,1	-0,9143
		P	32	288	562,3	154,3	242,9	519,3	2179,5	3252,9	3039,8	9388,6	-0,9401
19	Banichi - Glukhovo	C	19	31	92,6	9,9	15,5	33,2	139,3	207,9	194,3	600,0	-0,8457
		P	19	118	452,6	37,5	59,1	126,3	530,2	791,3	739,5	2284,0	-0,8018
20	Mikhailovskyy	C	49	1	3,2	0,8	1,3	2,8	11,6	17,3	16,2	49,9	-0,9359

№ s/n	The name of the railway section	Direction	The length of the section, km	The reduced turnover, thousand t-km	Annual income from transportation, total, thousand UAH	Annual maintenance costs (electricity, salary, materials, infrastructure maintenance) thousand UAH						Profitability	
						S	R	C	E	BMES	T		total
	Farm - Znob gr (Chiginok)	C	49	69	110,2	56,6	89,1	190,5	799,6	1193,4	1115,2	3444,3	-0,9680
21	Divination - Wolfino gr	P	21	53	102,3	18,6	29,3	62,7	263,2	392,9	367,1	1133,8	-0,9098
	Nizkovka - Koryukovka	C	16	7	136,5	23,6	37,1	79,3	332,7	496,6	464,1	1433,4	-0,9048
22	OP 43 km gr - Novgorod Seversky	P	16	40	21,2	1,9	3,0	6,3	26,5	39,5	36,9	114,1	-0,8142
		C	16	40	125,1	10,7	16,9	36,1	151,4	225,9	211,1	652,0	-0,8081
23		P	75	1	0,5	1,3	2,0	4,2	17,7	26,5	24,7	76,4	-0,9937
		C	75	6	18,2	7,5	11,9	25,4	106,4	158,8	148,4	458,4	-0,9603
24	Altynovka - Corop	P	23	60	89,2	23,1	36,4	77,8	326,4	487,1	455,2	1405,9	-0,9366
		C	23	4	2,3	1,5	2,4	5,2	21,8	32,5	30,3	93,7	-0,9755
25	Esman - Khutor Mikhailovsky (freight train)	P	29	1	2,1	0,5	0,8	1,6	6,9	10,2	9,6	29,5	-0,9289
		C	29	1	1,8	0,5	0,8	1,6	6,9	10,2	9,6	29,5	-0,9391
Total by railway			1504,0	13494,0	15986,7	10399,3	13139,9	28094,9	117919,9	175998,9	164470,2	510023,0	-0,9687

* Generalized by the authors by [76-80, 203]

Table 3.5
Calculation of profitability of low-activity sections of the Odessa railway*

№ s/n	The name of the railway section	Direction	The length of the section, km	The reduced turnover, thousand t-km	Annual income from transportation, total, thousand UAH	Annual maintenance costs (electricity, salary, materials, infrastructure maintenance) thousand UAH						Profitability	
						S	R	C	E	BMES	T		total
1	Artisz - Berezino	C	57	285	68,9	1002,3	428,1	915,3	3841,8	5733,9	5358,3	17279,7	-0,9960
		P	57	735	356,8	701,2	1104,0	2360,5	9907,7	14787,5	13818,8	42679,8	-0,9916
2	Rotovo - Migayevo	C	44	4535	8562,3	3339,9	5258,3	11242,9	47188,9	70430,8	65817,2	203278,0	-0,9579
		P	44	10029	21895,3	7386,0	11628,5	24863,4	104356,6	155755,3	145552,6	449542,4	-0,9513
3	Bogachevo - Dashukovka	C	46	406	502,3	312,6	492,2	1052,3	4416,7	6592,0	6160,2	19025,9	-0,9736
		P	46	898	1562,3	691,4	1088,6	2327,5	9769,9	14580,3	13625,2	42081,8	-0,9629
4	Khrisitovka - Andrusovo	C	95	1532	929,8	2436,0	3835,3	8200,3	34418,5	51370,6	48005,6	148266,4	-0,9937
		P	95	2632	1597,5	4185,2	6589,1	14088,3	59131,5	88255,5	82474,4	254724,0	-0,9937
5	Zolotonosha - Lyaplava	C	47	531	1569,3	417,7	657,7	1406,2	5902,0	8809,0	8231,9	25424,5	-0,9383
		P	47	683	2105,6	537,3	845,9	1808,7	7591,5	11330,6	10588,3	32702,3	-0,9356

№ s/n	The name of the railway section	Direction	The length of the section, km	The reduced turnover, thousand t-km	Annual income from transportation, total, thousand UAH	Annual maintenance costs (electricity, salary, materials, infrastructure maintenance) thousand UAH							Profitability
						S	R	C	E	BMES	T	total	
6	Uman - Khristinovka	C	21	1129	3101,2	396,8	624,8	1335,9	5606,9	8368,5	7820,3	24153,1	-0,8716
		P	21	1538	3560,2	540,6	851,1	1819,8	7638,1	11400,1	10653,3	32903,0	-0,8918
7	Monastyrshche - Ivakhni	C	14	157	102,8	36,8	57,9	123,8	519,8	775,8	725,0	2239,2	-0,9541
		P	14	44	43,6	10,3	16,2	34,7	145,7	217,4	203,2	627,5	-0,9305
8	Demkivka - Trostyanets	C	14	310	1200,3	72,6	114,4	244,5	1026,4	1531,9	1431,5	4421,3	-0,7285
		P	14	288	1189,2	67,5	106,3	227,2	963,5	1423,2	1329,9	4107,5	-0,7105
9	Oratovo - Soroka	C	16	302	456,3	80,9	127,3	272,3	1142,7	1705,5	1593,8	4922,5	-0,9073
		P	16	446	563,9	119,4	188,0	402,1	1687,6	2518,8	2353,8	7269,7	-0,9224
10	Zyatkovtsi - Gaivoron	C	62	2061	8965,3	2138,8	3367,3	7199,8	30218,9	45102,7	42148,2	130175,7	-0,9311
		P	62	5831	23098,3	6051,1	9526,8	20369,7	85495,7	127604,9	119246,1	368294,3	-0,9373
11	Gaivoron - Tauzhnya	C	26	141	125,6	61,4	96,6	206,6	867,0	1294,0	1209,2	3734,7	-0,9664
		P	26	71	45,8	30,9	48,6	104,0	436,6	651,6	608,9	1880,6	-0,9756
12	Golovanevsk -	C	30	1973	12564,2	990,7	1559,8	3335,0	13997,7	20892,0	19523,5	60298,8	-0,7916

№ s/n	The name of the railway section	Direction	The length of the section, km	The reduced turnover, thousand t-km	Annual income from transportation, total, thousand UAH	Annual maintenance costs (electricity, salary, materials, infrastructure maintenance) thousand UAH							Profitability
						S	R	C	E	BMES	T	total	
	Osipovka	C	30	1387	11588,2	696,5	1096,5	2344,5	9840,3	14686,9	13724,8	42389,5	-0,7271
13	Osipovka - Boleslavchik	P C	19 19	1681 1840	2040,2 3108,6	534,6 585,2	841,7 921,3	1799,6 1969,8	7553,2 8267,6	11273,4 12339,7	10634,9 11531,4	32537,3 35614,9	-0,9373 -0,9127
14	Novovesela - Kakhovka	P C	115 115	2751 1561	5100,2 3899,6	5295,3 3004,7	8336,9 4730,6	17825,4 10114,6	74816,6 42453,2	111666,0 63362,6	104351,3 59212,1	322291,4 182877,8	-0,9842 -0,9787
15	Kulbakino - Post 230 km	P C	3 3	154 101	210,3 165,3	7,7 5,1	12,2 8,0	26,0 17,1	109,3 71,7	163,1 106,9	152,4 99,9	470,7 308,7	-0,5532 -0,4645
Total by railway			1218,0	46032,0	120259,2	41736,6	64559,9	138037,8	579372,2	864730,2	808086,3	2496523,0	-0,9518

* Generalized by the authors by [76-80, 203]

Table 3.6

Calculation of profitability of low-activity sections of the Lviv railway*

№ s/n	The name of the railway section	Direction	The length of the section, km	The reduced turnover, thousand t-km	Annual income from transportation, total, thousand UAH	Annual maintenance costs (electricity, salary, materials, infrastructure maintenance) thousand UAH						Profitability	
						S	R	C	E	BMES	T		total
1	Buchach - Bila Chertkovskaya	C	29	1511	15211,3	733,4	1154,7	2468,9	10362,7	15466,6	14453,5	44639,9	-0,6592
		P	29	910	9896,2	441,7	695,4	1486,9	6240,9	9314,8	8704,6	26884,4	-0,6319
2	Exile - Ivane-Puste	C	59	1738	1562,3	1716,3	2702,2	5777,7	24250,0	36193,8	33822,9	104462,9	-0,9850
		P	59	1608	1456,2	1588,0	2500,1	5345,5	22436,1	33486,6	31293,0	96649,2	-0,9849
3	Skala-Podolska - Teresyn	C	14	227	845,6	53,2	83,7	179,1	751,6	1121,7	1048,2	3237,5	-0,7388
		P	14	21	92,5	4,9	7,7	16,6	69,5	103,8	97,0	299,5	-0,6912
4	Khodorov - Berezoivisa-Island	C	115	1790	5623,3	3445,5	5424,6	11598,5	48681,1	72658,0	67898,5	209706,2	-0,9732
		P	115	1751	5126,8	3370,4	5306,4	11345,8	47620,4	71074,9	66419,2	205137,1	-0,9750
5	Potutori - Berezhany	C	9	104	356,8	15,7	24,7	52,7	221,4	330,4	308,7	953,5	-0,6258
		P	9	90	288,9	13,6	21,3	45,6	191,6	285,9	267,2	825,2	-0,6378
6	Borki-Velyki - Grimalov	C	33	470	108,9	259,6	408,7	873,9	3667,9	5474,5	5115,9	15800,5	-0,9931
		P	33	2713	1892,7	1498,5	2359,3	5044,4	21172,6	31600,7	29530,7	91206,1	-0,9792
7	Yavorov - Zatoka	C	34	281	896,5	159,9	251,8	538,3	2259,4	3372,2	3151,3	9733,0	-0,9079
		P	34	216	789,8	122,9	193,5	413,8	1736,8	2592,2	2422,4	7481,6	-0,8944

№ s/n	The name of the railway section	Direction	The length of the section, km	The reduced turnover, thousand t-km	Annual income from transportation, total, thousand UAH	Annual maintenance costs (electricity, salary, materials, infrastructure maintenance) thousand UAH						Profitability	
						S	R	C	E	BMES	T		total
8	Kamen-Kashirsky - Verbka	C	51	1	4,5	0,9	1,3	2,9	12,1	18,0	16,8	52,0	-0,9134
		P	51	38	78,5	32,4	51,1	109,2	458,3	684,0	639,2	1974,3	-0,9602
9	Volodymyr- Volynskiy - Post 8 km	C	3	321	586,9	16,1	25,4	54,3	227,7	339,9	317,6	981,0	-0,4018
		P	3	207	487,9	10,4	16,4	35,0	146,9	219,2	204,8	632,6	-0,2288
10	Pigeons - Radoshin	C	12	46	120,5	9,2	14,5	31,1	130,5	194,8	182,1	562,3	-0,7857
		P	12	4406	1005,9	885,0	1393,3	2979,0	12503,6	18662,0	17439,6	53862,4	-0,9813
11	Mizoch - Ozerni	C	9	1	2,9	0,2	0,2	0,5	2,1	3,2	3,0	9,2	-0,6837
		P	9	44	110,8	6,6	10,4	22,3	93,6	139,8	130,6	403,4	-0,7253
12	Kremenets - Kamenica-Volynska	C	33	315	896,5	174,0	273,9	585,7	2458,3	3669,1	3428,7	10589,7	-0,9153
		P	33	515	2108,9	284,5	447,9	957,6	4019,1	5998,7	5605,7	17313,4	-0,8782
13	Beregomet - Glyboka Bukovina	C	53	979	897,6	868,5	1367,3	2923,5	12270,7	18314,3	17114,7	52859,0	-0,9830
		P	53	128	150,8	113,6	178,8	382,2	1604,3	2394,5	2237,7	6911,1	-0,9782
14	Mezhyrichchya - Karapchiv	C	19	261	897,6	83,0	130,7	279,4	1172,7	1750,4	1635,7	5051,9	-0,8223
		P	19	37	98,6	11,8	18,5	39,6	166,3	248,1	231,9	716,2	-0,8623
15	Vyzhnytsia - Zavalie	C	39	1	3,4	0,7	1,0	2,2	9,2	13,8	12,9	39,7	-0,9144
		P	39	7	18,9	4,6	7,2	15,4	64,6	96,4	90,0	278,1	-0,9320

№ s/n	The name of the railway section	Direction	The length of the section, km	The reduced turnover, thousand t-km	Annual income from transportation, total, thousand UAH	Annual maintenance costs (electricity, salary, materials, infrastructure maintenance) thousand UAH							Profitability
						S	R	C	E	BMES	T	total	
16	Luzani - Stefanesti	C	34	1613	5627,6	917,9	1445,2	3090,0	12969,5	19357,3	18089,3	55869,3	-0,8993
		P	34	294	1124,3	167,3	263,4	563,2	2363,9	3528,2	3297,1	10183,3	-0,8896
17	Zastavna - Verenchanka	C	23	1	2,4	0,4	0,6	1,3	5,4	8,1	7,6	23,4	-0,8976
		P	23	1	2,1	0,4	0,6	1,3	5,4	8,1	7,6	23,4	-0,9104
18	Vyhoda - Dolyna	C	9	2	4,8	0,3	0,5	1,0	4,3	6,4	5,9	18,3	-0,7382
		P	9	1	1,7	0,2	0,2	0,5	2,1	3,2	3,0	9,2	-0,8146
Total by railway			1156,0	22649,0	58390,9	17011,4	26782,7	57265,0	240352,6	358733,5	335234,7	1035380,0	-0,9436

* Generalized by the authors by [76-80, 203]

The above proves the existence of a direct link between the activity of freight-generating enterprises and organizations and the intensity of activity of inactive railway lines. Therefore, the analysis of their effectiveness should be performed in close connection with the areas of cargo formation. It is also necessary to take into account the fact that some destinations can be served by other modes of transport. Therefore, the problem has several solutions. The simplest option - due to low efficiency - the transfer of freight traffic to a related mode of transport with the closure, in the future, the railway section. There are methods that make it possible to roughly calculate the feasibility of closing such an area. They allow you to calculate the possibility of closing stations, with the transfer of cargo to road or river transport.

An alternative is also to reuse the track infrastructure of the inactive section. The railway line is being disassembled. Given the high quality and reliability, a large stock of engineering capacity, there are opinions about the development of the existing direction of the highway. This is especially true of the use of man-made structures - bridges, pipes, viaducts - where there is a specific terrain, or reservoir.

In each such case, the decision to close the inactive section should be made only after a thorough calculation of the economic efficiency of its operation. It is necessary to take into account not only the cost of transportation by type of cargo and categories of passengers, but also revenues and opportunities for government subsidies, as often the railway has to transport

passengers and goods at unfavorable rates, which make it impossible movement (Tables 3.2 - 3.6).

It is the reform of railway transport that will make it possible to adapt it as best as possible to the factors influencing the changing environment. Many issues in the reform process need to be addressed for inactive polling stations as well.

The general trend abroad speaks of unambiguous dominance and switching of freight traffic to road routes. But also the capacity of such roads has certain limitations.

A study of the functioning of inactive polling stations abroad reveals another feature. In some cases, it was considered economically feasible to use temporary inactive sections that were used only to solve specific problems, such as the construction and experimental maintenance of a particular production complex. After that, the track was dismantled.

In our area, the situation is reversed. For various reasons, a site that has not been used for its intended purpose for a long time (for the purpose of construction) cannot be closed and dismantled. And unprofitable operation and maintenance continues.

But measures that can significantly reduce the cost of operation of inactive lines. Basically, it is the transfer of sections to electric traction. Experience has shown that operating costs are significantly reduced. But this measure causes significant associated costs associated with the construction of the power grid, traction substations, maintenance of electric crews, and so on.

Rail transport will not cope on its own. But, given the national and economic context of this problem - we consider it appropriate for public authorities to be the initiators and guarantors of such projects and the importance of projects.

Without state support, there are almost no options for ensuring the effective functioning of low-activity polling stations.

But the current realities, which are manifested in the growing integration processes of Ukraine into the European transport environment, the problem of activity of low-activity areas is deepening.

We are talking mainly about the so-called border areas, where rolling stock is transferred from one track to another, there is a different intensity of traffic and capacity and capacity of rail transport of neighbors. In such cases, integration problems are added to the existing problems in the operation of low-activity sections [77, 79, 80].

The task should be solved with the involvement of specialists in the field of transport engineering, which will harmonize the norms and standards of European and domestic.

But before taking measures for development and harmonization, it is necessary to make a large-scale marketing study of the areas of gravity of goods and passengers, so that measures to improve the infrastructure of such sections have the greatest impact and serve as an incentive for further development and experimentation [80]. In general, these data show that the level of transportation costs is influenced by the

size of vehicles, their capacity. One of the important reasons for the low cost of rail transport is the large capacity of vehicles, their large size.

An important factor in the cheapness of rail transport is the high level of labor productivity, associated primarily with the factors already considered: the high capacity of technical means and the mass nature of transportation.

At higher loads, traffic-dependent costs are spread over more tonne-kilometers and this reduces the cost. Accelerating the turnover of rolling stock allows you to perform specified traffic with fewer locomotives and cars. Reducing costs for all these items reduces transport costs, and, with the same amount of traffic, reduces the cost per tonne-kilometer. Similarly, the increase in productivity, which reduces wage costs in the total operating costs and reduce costs, especially in low-income areas [69]. Thus, the study is crucial in the formation of strategic positioning of low-activity sections in the railway transport system of Ukraine.

In accordance with the peculiarities of the modern national economy, it is the way to ensure sustainable strategic positioning and economic equilibrium most fully meets market requirements and takes into account global trends in railway transport, taking into account the need to determine the optimal limits of commercialization of economic relations of railway transport market economic processes of each of the segments of the transport market [77].

CONCLUSIONS

Based on a critical analysis of previous research, it is established that:

1. The unified transport infrastructure of Ukraine should be considered as a set of different modes of transport that provide transportation of goods and passengers and act as a complex that includes rail, road, sea, river, air and pipeline transport with all communications, transport hubs, rolling stock, loading and unloading means, devices and constructions.

Transport reflects the level of the national economy and its competitiveness and creates conditions for the establishment of long-term strategic ties and cooperation of all economic entities, regardless of industry affiliation and ownership. The efficiency of the transport process of organizing the transportation of passengers and delivery of goods by different modes of transport, primarily depends on the branching of the transport infrastructure, as well as the center of interaction of related modes of transport.

2. Ukraine's transport infrastructure is aimed at timely, high-quality and full satisfaction of the national economy and population in transportation with their rational distribution between modes of transport, in order to reduce transport costs; integrated development of system bandwidth; coordination and unification of parameters of technical means of each type of transport; ensuring a single technology and organization of work of different types of transport in the transfer of goods, transfer of passengers and the organization of a comprehensive transport and forwarding, quality service; unification of tariffs, conditions

and rules of transportation of cargoes and passengers, planned, reporting, operational, and also economic indicators of work of all types of transport, their harmonization with the international standards and rules.

3. Economic and historical analysis of the formation of transport infrastructure shows that it took place in different socio-economic and political conditions. And each of the stages significantly changed both the general situation and conditions, and the tasks set before the transport system in a certain period of time and ways to solve them. The author highlights the main stages of formation of transport infrastructure.

4. Issues of coordination of development and interaction of modes of transport are solved in the economic, technical, technological, financial, organizational, informational and legal spheres of activity. Based on the analysis, the author highlights the specific features of the transport infrastructure of the national economy of Ukraine as an integral part of the production infrastructure and the main requirements for it by enterprises of cargo-forming industries of the national economy.

5. The study of economic and historical principles of formation of transport infrastructure of Ukraine revealed a stable positive dynamics of transportation, which corresponds to the main trends of economic development of Ukraine. The detailed analysis revealed the factors that had a decisive influence on the initialization of the process of construction of railways in certain areas, in certain areas. The sources of formation of freight flows on railway transport are revealed and the possible reasons of formation of inactive sections are revealed.

The authors propose to consider inactive sections of railway transport as a section that is significantly inferior to the average volume of traffic per day of passenger and freight trains, compared with the same indicator for the railway as a whole (not more than 20%), and does not reach a break-even level due to low traffic.

The level of traffic, at which the site belongs to the category of inactive, is established by the Rules of technical operation of the railways of Ukraine.

6. The main ways to solve the problems of operation of inactive sections of the railways of Ukraine are proposed, which are as follows:

- development of comprehensive basic strategies for the operation of inactive sections;
- evaluation of the criterion of economic efficiency, which is based on the concept of cost-oriented management;
- development of methodological and organizational approaches to the formation of a cost management system in inactive areas;
- improving the system of indicators of quality of transport services in inactive sections.

7. The monograph analyzes the mechanisms of development of inactive lines on foreign railways. The authors mainly express these mechanisms through line closure, conservation, optimization of service technology - modernization or reduction of costs for maintenance of inactive lines, transfer of lines to the subjects of the transportation market, their sale or lease. Thus, using the world experience of low-activity sections, on the Ukrainian railways we can talk

about the possibility of improving the efficiency of their operation.

8. It is scientifically substantiated that the transport infrastructure of foreign countries has a significant impact on the transport system of any country. The market mechanism of transport infrastructure management in Austria, Belgium, Bulgaria, England, Denmark, Ireland, Spain, Italy, Estonia, Latvia, Lithuania, Germany, France, Poland, Portugal, Romania, Hungary, Finland, and the Czech Republic has been studied.

9. In the process of research the perspective directions of development of the transport system of Ukraine are determined, taking into account the experience of foreign countries and strategic priorities of the national economy. Based on the research, the main objectives of the transport sector in Ukraine in the post-crisis recovery are identified, the main objectives of sectoral transport modernization, ways to attract foreign investment to ensure structural transformations in the transport sector and the main measures for public-private partnership mechanisms for accumulation. financial resources in the development of transport infrastructure. The monograph scientifically substantiates the feasibility of improving the investment climate for the transport sector, ways to integrate the domestic transport system into European and international transport systems and develops basic measures to improve the efficiency of public administration in the field of transport.

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