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Methodological Foundations of Renewal and Expansion of Car Fleet

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ABSTRACT

Currently, Russian international road transport carriers do not have sufficient potential to successfully compete with their foreign partners. The main reasons for this are significant deterioration of the car fleet and its non-compliance to modern environmental requirements, lack of own funds for timely renovation and development of the motor transport fleet, as well as systemic lag in development of transportation technologies and their logistics support.

The objective of the article is to substantiate the choice of rational measures to solve the problem of expanded reproduction of car fleet used in international road haulage. The methodology used in preparation of the article is based on the use of general scientific methods in combination with special methods, including the analysis of statistical data on international road haulage, a comparative analysis of the state of the car fleet of Russian carriers, considering the basic conditions and operational characteristics, classification of the fleet of trucks based on typification of their operational characteristics with subsequent subdivision of this fleet into three main groups, an overview analysis and benchmarking of foreign operating experience and future development of car fleet, an analysis of the economic and legal possibilities of raising funds for renewal of car fleet.

The article examines and studies: a) urgency of solving the problem of renewal and expansion of the car fleet used by Russian carriers in international road transportation; b) foreign experience and trends in development of fleet used for international haulage; c) the main directions of providing economic opportunities for transition to expanded renewal of vehicles; d) analysis of the legal possibilities of providing public support for expanded reproduction of the motor transport fleet of Russian international road carriers including through the use of public-private partnerships.

Based on the results of the study, proposals have been developed aimed at ensuring renewal and expansion of car fleet and increasing the efficiency of international road haulage operations.

Keywords: road transport, international transportation, deterioration of car fleet, reproduction of production assets, government support.

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INTRODUCTION

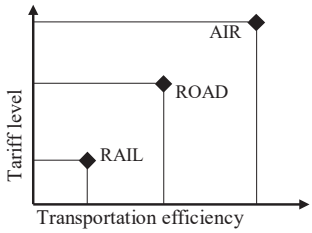
International road haulage both in the European Union and in Russia is a type of production and economic activity in demand by cargo owners. Road transport, in comparison with its main competitors, railway transport and civil aviation, is characterised by a combination of moderate tariffs with a sufficiently high speed of transportation (Pic. 1).

This combination of the most important consumer characteristics of road transport provides a stable development trend for international transportation (Pic. 2)[1].

Comparison of the conditions of transportation of goods by Russian and foreign carriers in international traffic shows that Russian carriers cannot fully compete with their foreign counterparts. The main reasons for this situation are significant deterioration of the car fleet; continued operation of vehicles of low ecological classes; lack of carriers' own funds for timely renewal of the car fleet; systemic lag in development of transportation technologies and logistics support of transportation.

Ensuring commercial load of cars in reverse direction is a significant problem for increasing efficiency of cargo transportation. At present, the volumes of import and export road haulage have practically become equal (Pic. 3). This contributes to an accelerated return on investment. Hence the relevance of consideration of the issues of rationalising the economic mechanism for renewal of worn-out car fleet and its expanded reproduction.

[1] Hereinafter, pictures and tables are developed and compiled by the authors based on statistical information of Federal State Statistics Service (Rosstat) and Avtostat analytical agency.



Pic. 1. Comparison of tariff affordability and efficiency of road transportation (ROAD), railway transportation (RAIL), and air transportation (AIR).

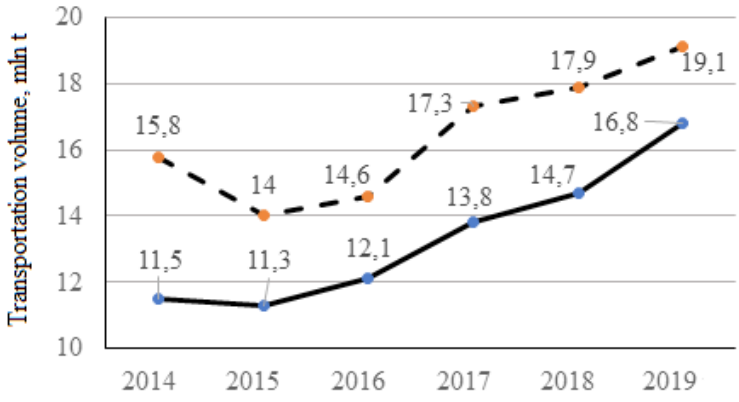
The *objective* of the article is to study the problems associated with deterioration of the car fleet used for international road transportation of goods, and its timely renewal, to propose a rational solution for timely expanded renovation of the car fleet of Russian carriers.

MATERIALS AND METHODS

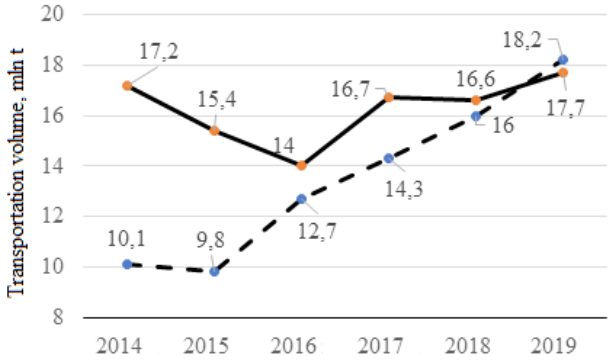
Information sources used for preparing the article comprised the results of statistical observation of the composition of the car fleet used for international transportation of goods, materials of Federal State Statistics Service (Rosstat) and Avtostat analytical agency, the results of research and development carried out with participation of the authors at JSC NIIAT (copyright know-how), scientific publications, valid normative legal acts.

The *methodology* used by the authors in preparing the article includes general scientific research and design development methods, as well as the following special and applied research methods:

• Statistical analysis of data on international road transportation of goods, availability of the



Pic. 2. The volume of international road haulage performed by Russian carriers (solid line) and foreign carriers on the territory of Russia (dotted line).



Pic. 3. Dynamics of the volume of cargo transportation in international road traffic: solid line – import; dotted line – export.

fleet of trucks[2], the conditions and characteristics of their operation, the state of physical deterioration of this fleet.

• The analysis of compliance of the car fleet of Russian carriers to current and future environmental requirements, considering the basic conditions and operational characteristics and topical problems of timely renovation of this fleet.

• Classification of the fleet of trucks based on established heterogeneous conditions and operational characteristics with subsequent division of this fleet into three main groups (that is, the method of general classification of objects and their decomposition).

• An overview study of foreign experience in operation of trucks used for international road transportation, and of prospective development of the car fleet to benchmark the results of this analysis.

• Analysis of economic and legal possibilities of attracting additional funds for renewal of the fleet to compensate for the consequences of the existing negative trend of aging of this fleet and its inconsistency with modern and future environmental requirements.

RESULTS

The State of the Car Fleet Used for International Road Haulage

The fleet of Russian carriers used for international road haulage has increased physical deterioration, which is explained by the long service life of vehicles (Table 1). For clarity of perception of information on the dynamics of the structure of the car fleet as per service life over the past few years, a diagram (Pic. 4), built according to data of Table 1, shows that the share of car fleet with a significant service life is increasing. This trend exacerbates the precarious position of Russian carriers in international transportation. The share of new cars in this fleet tends to decrease somewhat. This situation is explained by the fact that carriers do not have sufficient financial resources to renovate the worn-out part of the vehicle fleet, as well as to expand it to further develop the business.Because of the above-standard service life of cars of Russian carriers of goods in international road transportation in terms of useful life, the problem of inconsistency of a significant share of the car fleet with current and future environmental requirements and standards arose (Table 2).

Significant physical deterioration of vehicles of Russian carriers causes an increase in the cost of current maintenance and repair of the fleet. The resulting increase in the cost of transportation forces carriers to raise tariffs, which also reduces competitiveness of business entities operating in the transportation market.

The study of information on the state of the market of international road haulage and on the position of Russian carriers on it allowed us to establish subdivision of transport organisations operating from 20 to 40 vehicles into three characteristic groups (Table 3) and to study a set of issues that are essential for the success of carriers in the transport market. The grouping of carriers was carried out based on the criterion of maximum similarity of operating conditions and their economic position in the market of international road haulage.

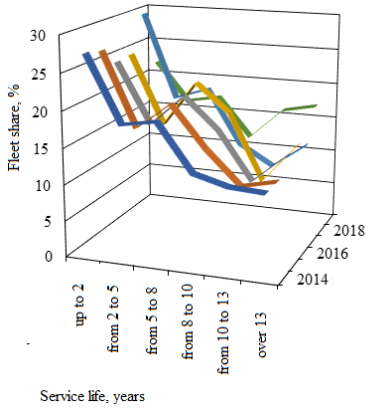
The information presented in Table 3 shows that the general situation in the considered sector

[2] The term «truck» in the original Russian text is used here and further-on by the authors in a broad sense and refers to all types of road vehicles used in international road transportation of goods without distinguishing trucks, light trucks, lorries, road tractors, trailers, semi-trailers, etc., if not mentioned otherwise. – *Translator's note*.

Table 1

Structure of the car fleet of Russian carriers used for transportation of goods in international traffic, per service life, %

Service life, years	2014	2015	2016	2017	2018	2019
Up to 2	27,4	26,9	24,5	24,7	29,8	21,9
More than 2 up to 5	18,3	16,7	16,1	14,9	17,8	16,3
More than 5 up to 8	19,1	20,4	20,4	21,3	19,4	17,2
More than 8 up to 10	12,7	14,7	16,1	17,4	11,7	11,6
More than 10 up to 13	11,4	10,1	9,4	8,1	8,9	16,0
Over 13	11,1	11,2	13,5	13,6	12,4	17,0



Pic. 4. Graphical presentation of the dynamics of the fleet of Russian carriers of goods in international road transportation (2014–2019).

Table 2

Distribution of cars of Russian carriers, performing international road transportation of goods, per ecological class, %

Ecological class	2014	2015	2016	2017	2018	2019
EURO-0	6,9	6,8	7,3	7,0	6,9	7,1
EURO-1	0,9	0,7	0,6	0,5	0,3	0,3
EURO-2	5,5	4,8	3,8	3,8	3,3	3,0
EURO-3	37,0	33,7	31,2	26,2	23,0	19,7
EURO-4	8,3	8,0	7,4	7,0	6,6	6,0
EURO-5	41,4	46,0	49,7	55,5	59,7	63,8
EURO-6	0,0	0,0	0,0	0,0	0,1	0,1

of the transportation market cannot be considered satisfactory. The main reason for this situation is the lack of opportunities for carriers to purchase new car fleet that meets modern and future environmental requirements.

The Main Directions of Restructuring the Fleet of Trucks in Europe

In contrast to Russia, in Europe, the main problem of car fleet renewal, including the trucks with a large payload capacity, is associated not with the availability of financial resources for carriers, but with the need to replace the vehicles with internal combustion engines with the fleet equipped with environmentally friendly engines while simultaneously increasing fuel efficiency and carrying capacity of vehicles. The fact is that European countries, with which Russian carriers provide transport links very important for the Russian economy, have very strict environmental legislation, and the civil society of these countries takes an active position in matters of environmental safety and environmental protection. In this regard, a significant amount of cargo transportation intended to or from these countries goes to foreign partners of Russian carriers, who have more modern vehicles of high ecological classes [1].

During the establishment of the EU, the preservation of the habitat was one of the priority goals of the member states of the Union. From 1992 to the present, six documents have been adopted that regulate environmentally unfavourable transport emissions. The emission

Table 3

Characteristics of typical groups of road transport carriers, essential for renewal of rolling stock

Characteristic	Group 1	Group 2	Group 3
Brand composition of the car fleet	Cars manufactured in the CIS countries	Cars manufactured in the CIS countries and a certain share of cars manufactured in other countries	Cars manufactured in the CIS countries and other cars mainly of the VOLVO, MAN, SCANIA brands
Average service life of cars, years	15–20	13–17	7–12
Ecological class of cars	0, 1 and 2	0, 1, 2, 3	4 and higher
Load capacity of cars	Low and medium	Low to high	Medium to extra high
Technical maintenance (TM) and routine repairs	As a rule, carried out by the drivers	Own personnel perform TM and simple repairs, while the major unit replacement and unit repair is performed in specialised workshops	Performed in specialised workshops
The scope of operation of the fleet	Transportation within the constituent entities of the Russian Federation	Transportation within the constituent entities and between the constituent entities of the Russian Federation	Transportation between the constituent entities of the Russian Federation and international road transportation
Conditions of capitalisation of the business	Minimum share capital, no capital reserves, cash gaps, zero profit or negative balance	Minimum share capital, no capital reserves, often zero profit or negative balance	Minimum share capital and minimum capital reserves. Balance sheet with a slight positive balance
Problems in the sphere of labour relations	Delays in wages, wages according to the informal scheme. Systematic violations of labour legislation	Often, remuneration for labour according to the informal scheme. Occasional violations of labour legislation	Universal (background) problems characteristic of all sectors of the Russian economy. Labour violations are relatively rare
Depreciation practices and the possibility of renovating fixed assets	Depreciation is not charged due to complete deterioration of the fleet and other equipment. Impossibility of renewal at the expense of own resources	Limited depreciation amounts due to high depreciation of the fleet. There are very few own resources for renovation of fixed assets	Depreciation is charged on vehicles that have not reached the end of service life. Lack of own resources for renovation of fixed assets
Possibilities of attracting external funding sources for renewal and expansion of the fleet	Leasing is rarely possible and only on very unfavourable terms. Money lending is excluded due to the almost zero assessed value of assets	Limited leasing option on unfavourable terms (large down payment, short lease terms, high payment rates). Lending opportunities are very limited due to the low assessed value of assets	Usually available. Leasing and loans are used
Stability of contracts with clientele	Mostly transportation contracts	Transportation contracts and transportation contracts for up to one year	Transportation contracts for up to three years and one-off transportation contracts
The current position of carriers in the road transportation market	They leave the market: about 50 % of organisations have ceased to exist during last 10 years	They leave the market or are close to a critical (unstable) state	There are limited prospects for maintaining their positions in the market
Possibility of simple renewal of the fleet	Absent	Available only partially, mainly using borrowed funds	Available using equity and borrowed capital
Possibility of renewal and expansion of the fleet	Absent	Absent	Severely limited
Forecast of viability of transport organisations	Negative	More likely negative, but with some positive confidence	Satisfactory

limit values are established according to the list of harmful substances including carbon monoxide, hydrocarbons, nitrogen oxides, etc. The main trend is gradual tightening of emission regulations.

Carriers are encouraged to operate cars with advanced power plants by various measures, including subdivision of the territories of settlements into zones which only vehicles of certain ecological classes are allowed to access.

The practices of zoning the admission of cars to certain territories, depending on the environmental friendliness of engines, are recognised in Europe as an effective measure for preserving the environment. In Europe, a policy has been adopted to abandon the use of diesel engines. It becomes not only unprofitable but simply impossible to operate non-environmentally friendly cars. In this regard, the vehicle fleet is being intensively renewed [2; 3].

The heightened public interest in European countries in the problems of environmentally friendly transport is manifested in a broad discussion of parliamentarians and wide circles of the public, constantly finds a response in the media. Here are some examples of this.

In the Netherlands, territorial ecological zoning of vehicle access is used, and a ban has been imposed on the entry into several such zones of trucks with engines of Euro-4 and below, and from 2022 entry for vehicles with engines of Euro-5 will be completely prohibited. From 2025, it is planned to impose a complete ban on the entry into cities of any trucks with engines running on fossil fuel. Only hydrogen-fuelled vehicles and electric vehicles will be allowed to enter such areas. In Germany, a ban has been established on the entry into the central parts of the largest cities (Berlin, Hamburg, Stuttgart, Aachen, Frankfurt am Main) of cars with diesel engines of environmental classes below Euro-6. It is believed that this will force automakers to produce more hybrid vehicles[3]. Serious restrictions for low-emission vehicles were also imposed in Spain. In Madrid, the city centre is almost completely closed to the entry of non-environmentally friendly vehicles. Paris authorities have banned diesel vehicles from entering the city centre, and the access of gasoline-powered vehicles has been severely restricted. By 2030, it is planned that only hydrogen-fuelled and electric vehicles will have access to the territory of the French capital.

The UK has also imposed restrictions on the use of non-environmentally friendly cars. There are restrictions on the entry into the centre of London of cars with engines below the Euro-4 standard[4].

The European Union and its member countries are trying to stimulate companies involved in production of eco-cars. Such producers are provided with loans on preferential terms and tax holidays. In the European Union, heavy vehicles make up only 4 % of the total vehicle fleet. But these cars account for about 30 % of the emissions of CO_2 and other harmful substances into the atmosphere[5]. Therefore, strategic planning for development of road transport is aimed at using market mechanisms that contribute to renewal of car fleet. It is considered a problem that information on fuel consumption of heavy vehicles is currently neglected. Therefore, monitoring of operation of heavy vehicles, the certification system, statistical accounting, and reporting are being improved. An information base is being created on the sales of heavy vehicles, operating conditions, fuel consumption and freight traffic. A tendency has been established towards the increase in the average payload capacity of operated heavy-duty vehicles. The leading manufacturers of heavy-duty vehicles in terms of the number of new vehicle sales are Volkswagen, Volvo, Daimler, PACCAR, and Iveco [4; 5].

In Europe, research and development activity has been launched with the aim of replacing in the foreseeable future diesel engines and gasoline engines with alternative power plants. The developments are aimed at increasing the energy efficiency of cargo transportation and the carrying capacity of vehicles [6]. Thus, a study of fuel consumption of cars with diesel engines and various hybrid engines in real operating conditions using the example of Finland showed that the energy efficiency of operation of heavy vehicles can be increased by 6 % when switching to hybrid engines. Specific fuel consumption per 1 ton•km decreases on average by 17 % with an increase in the total mass of a loaded vehicle from

[3] Is this the end of Euro-5 trucks? Europe declares war on non-ecological trucks [*Eto konets gruzovikov standarta Evro-5? Evropa obyavliaet voinu neekologichnim gruzoviakm*]. [Electronic resource]: https://trans.info/ru/eto-konets-gruzovikov-standarta-evro-5-evropa-obyavlyaet-voynu-neekologicheskim-gruzovikam-133630. Last accessed 26.08.2021.

[4] Offers 3 thousand euros per month, is looking for 60 drivers. But there are no volunteers… [*Predlagaet 3 tys. evro v mesiats, ischet 60 voditeley. No zhelayuschikh net*]. [Electronic resource]: https://trans.info/ru/predlagaet-3-tyis-evro-v-mesyats-ishhet-60-voditeley-no-zhelayushhih-net-252015. Last accessed 26.08.2021.

[5] EU countries finally agree on tougher environmental standards for cars [*Strany ES okonchatelno soglasovali uzhestochenie ekologicheskikh norm dlia avtomobiley*]. [Electronic resource]: https://www.dw.com/ru/страны-ес-окончательно-согласовали-ужесточение-экологических-норм-для-автомобилей/a-48329696. Last accessed 26.08.2021.

40 tonnes to 60 tonnes. Hybridisation of the engine becomes especially effective when driving over rough terrain [7]. Since the efficiency of using vehicles is determined, first, by fuel consumption, models of diesel fuel consumption by heavy vehicles have been developed that consider various operational factors [8].

The article [9] proposed an overview of promising projects for creation of a new generation of trucks, providing a significant reduction in energy consumption for transportation of goods and payload capacity of the car fleet. The development of such projects is based on the methodology of platooning. The developments refer not only to new environmentally friendly engines, but also to car control systems using information technologies, automated driving, creation of a system of mutual information exchange between various vehicles for their coordinated movement providing a minimum safety distance to increase the transit capacity of road infrastructure network.

The electrification of the fleet is recognised as a promising direction for a radical solution regarding enhancement of environmental friendliness of heavy vehicles. In this regard, it should be pointed out that the efficiency of an electric motor is twice, or even more, higher than this indicator of an internal combustion engine. Thus, the environmental effect is achieved not only due to the transition of vehicles to electric traction, but also due to a sharp reduction in energy consumption for traction.

Currently, the main disadvantage of electric vehicles is the significant mass of onboard energy sources compared to the use of hydrocarbon fuels. This increases the tare rate (unladen weight) of the car, it carries not only the payload, but also the heavy onboard energy source. The way out is to use an external source of electricity. This can be achieved by equipping the main routes with trolls. Note that in Russia there is a positive experience of operating dual-mode buses («duobuses», a trolleybus equipped with an auxiliary internal combustion engine for moving along a part of the route not equipped with trolleys), which were previously used to deliver goods from trading bases to GUM, one of the main department stores in Moscow.

Leading car manufacturers of the European Union countries carry out R&D on creation of main line trolleytrucks (or freight trolleys). Sweden became the first country to operate a trolleybus line for long-haul cargo transportation. The spread of such a fleet will be facilitated by the presence in Europe of a developed network of excellent highways. Siemens has been testing such electrified heavy good vehicle system since 2012 on two test tracks in Germany (eHighway, Pic. 5).

Consistent and comprehensive tightening of environmental requirements stimulates European carriers to purchase green vehicles when renewing their car fleet. At the same time, a significant increase in the price of such vehicles is an important circumstance in comparison with vehicles of lower environmental classes.

Known Methods of Fleet Renewal

Many people are mistaken because they believe in existence of some kind of «money box» in which depreciation charges are supposedly accumulated. The article [10] shows that this widespread myth has nothing to do with economic practices. At present, compulsory accounting records [in Russia] do not provide for depreciation funds. Depreciation charges included in the cost of transport services are not stored without movement, but immediately after receipt as part of the proceeds are used to make current payments to the organisation (figuratively speaking, they «melt»). Serious depreciation «scissors» have arisen in transport, since due to complete deterioration of a significant part of fixed assets, depreciation is not charged at all. Vehicle prices are growing significantly faster than depreciation charges based on historical prices. Purely theoretically, purchase of new vehicles at the expense of depreciation is possible only with a fleet of unworn fleet of more than 15–20 units, since depreciation charges are made annually for such a fleet, and they will be enough to purchase one car. In this regard, it is currently impossible to purchase enough new cars for renewal using the own means of transport organisations. Moreover, it is impossible to expand the fleet at the expense of the aforementioned funds.

Because of the lack of own funds for renewal and expanded reproduction of the fleet, it is possible to use funds from third-party organisations. Such funds can be provided to carriers through credit or leasing agreements.

Scientific literature does not contain a solution generally accepted by the economic community to the problem of effective renewal of fixed assets of economic entities at the expense of funds attracted from outside. The relevant theoretical

Pic. 5. Electric-powered system for heavy good vehicles on a specially built test track in the north of Berlin, Germany. (Photo: Siemens. https://press.assets.siemens.com/content/siemens/press/ui/en/search.html#/asset/sid:320d002d-fa74-4a64-882c-715abfa3b6e5).

aspects of reproduction of the rolling stock in recent years have been developed mainly within the framework of dissertation research. The work [11] considers the mechanisms of organising reproduction of fixed capital in vertically integrated economic complexes. In road transport, such connections between business entities are not common, and therefore, in this work, rather organisational, managerial, and administrative models are of primary interest for our study. T. S. Babaev studied formation of the investment policy of a transport company based on program-targeted management [12]. Attention is paid to consideration of the problems of using borrowed funds, intended for renewal of the wagon rolling stock depending on demand for transportation. D. Yu. Kashtanov [13] developed recommendations for creating a mechanism for attracting investments in the field of passenger road transport. Financial leasing and bank lending are recommended as the main mechanisms for attracting investments to renew the fleet. The work of A. E. Filin [14] studied possibilities of using financial lease (leasing) for renewal of rolling stock. Recommendations are made on the use of leasing operations, considering the specifics of railway transport. The Ph.D. thesis of I. V. Titov [15] studied the economic mechanisms of formation of the need for funds for renewal of the bus fleet and formation of appropriate investments based on formation of a depreciation deduction fund.

Leasing is currently attractive for business entities due to minimisation of value added tax payments. However, leasing has constraints as for its use by road carriers for the following reasons:

• Difficulty in approving a leasing transaction and a rather high cost of financial resources used for primary payments.

• The carrier does not have the right to dispose of the leased asset, since the owner of the rolling stock is the lessor.

• Additional costs associated with conclusion of the lease agreement (one-time commission payments for the transaction and monthly payments during the entire term of the agreement).

International road carriers are not able to widely use leasing and bank lending due to increased rates for provision of borrowed funds because of the low valuation of carriers' own assets, instability of transport organisations in the context of seasonal fluctuations in demand for their services, intense competition in the market of international transportation.

According to the data obtained by JSC NIIAT, the annual renewal of the fleet of trucks (considering their prevailing excessive deterioration) should be about 12 %. In fact, at present, the annual fleet renewal does not exceed 5 % on average [16].

The main problems of attracting investment resources by road carriers include [17]:

• High level of carriers' accounts payable.

• Unsatisfactory financial discipline of carriers, explained by financial shortfalls, which leads to an increase in the loan rates.

• Low level of profitability of road carriers decreasing down to zero.

• The factors of international economic situation and the problems due to COVID-19 coronavirus pandemic have significantly reduced the volume of foreign investment.

Legal Possibilities of State Support for Russian Carriers

Transportation of passengers and goods by road as a type of economic activity refers to services (Chapter 40 «Transportation» of the Civil Code of the Russian Federation (further referred to as CCRF), Federal Law «Charter of road transport and urban land electric transport» No. 259-FZ dated 08.11.2011[6], international agreements on international transportation with the participation of Russia). The economic activity of a carrier in the transport services market is related to entrepreneurial activity.

The legislation limited direct participation of the state in economic activity as of an economic entity since state authorities and administrations are not entities of the kind but exercise the functions of public administration. This rule follows from one of the fundamental postulates of the market economy, according to which the state is an ineffective economic entity. State bodies and local self-government bodies do not have the right to participate on their own behalf in business companies[7], which are corporate commercial organisations with authorised capital divided into shares of founders (participants).

It is advisable to carry out state entrepreneurship exclusively in areas where the obtained useful result does not have a purely economic value, but is aimed at solving other problems (social, environmental, defence-related, etc.), including within the framework of infrastructure projects [21], as well as in the field of natural monopolies. In this regard, direct participation of the state in the activities carried out by entrepreneurs is allowed only in a quality of a participant in contractual relations in the status of an acquirer under a civil law contract. It is in this sense that the state authorities and administrations according to Art. 124 of the CCRF act in relations regulated by civil law, on an equal footing with other participants in such relations, who are economic entities. At the same time, the state can take part in economic activity in other forms (not as an entrepreneur) [18].

[6] Hereinafter, normative legal acts are considered, considering the amendments that followed after the entry into force.

[7] Article 66, part 6 of the CCRF.

Regarding the topic of this article, participation of the state in economic activity can be carried out in the form of:

• Normative legal regulation of the complex of economic relations. The main acts of legislation in this sphere of relations are the Civil Code of the Russian Federation and federal laws and bylaws adopted in accordance with it, regulatory legal acts of legislation on taxes, labour, finances, natural resources, etc., as well as federal laws regulating certain economic relations. We emphasise that in this case the state does not carry out entrepreneurial activity as such but sets its rules.

• Financing the implementation of measures carried out to implement state programs for development of the national economy in accordance with the Federal Law «On Strategic Planning of the Russian Federation» No. 172-FZ dated June 28, 2014, and the corresponding strategies and programs for development of the Russian Federation, its regions and municipalities (only within the framework of the amount of state targeted funding provided for in these documents).

• Founding with the use of state property of legal entities (state commercial organisations) and participation in management of privatised state property. In this regard, it is appropriate to recall that a legal entity is always an independent subject of economic activity, and the state can only have the right to manage its property, but not the right to the legal entity itself. Legal entities created by the state are not liable for the obligations of the public authorities that established them (Article 126, Clause 2 of the CCRF). Accordingly, the state is not responsible for the obligations of the legal entities created by it, except for cases provided for by law (Article 126, Clause 3 of the CCRF). However, this rule does not apply if the state has assumed a guarantee (surety) for the obligations of a legal entity.

• Implementation of projects that are not of commercial interest to private investors (prohibition of private investors to carry out certain activities, as well as economically unprofitable and low-profit projects with a very high degree of risk, which makes it inexpedient to invest private capital, but which are necessary to solve tasks that are mandatory function of the state). Such participation must be legitimised by regulatory legal acts. It can be carried out particularly in the form of a public-private partnership [19].

The analysis of the essence of possible participation of the state in economic activity and of achievement of the goals of providing state support for entities engaged in international road transportation of passengers and goods allows us to indicate the most appropriate forms of such interaction between the state and business:

• Integration of measures of state support in various programs and strategies for development of transport, indicating funding from budget sources and extra-budgetary funds. At the same time, the principles, goals and objectives of such support, indicators for assessing the results achieved should be determined.

• Creation of public joint-stock companies (PJSC) with participation of state capital [20]. The peculiarities of the legal status of joint-stock companies, the shares in the authorised capital of which are owned by the state and are not assigned to state or municipal unitary enterprises, are determined by the CCRF. Considering the possibility of participation of private shareholders in the work of the company and creation of guarantees for safety of invested state funds, it is advisable that state investors retain a control stock in PJSC's capital or own a golden share. In any case, the effective use of funds invested by the state, their return to the state investor and the profitability of the company's activities must be ensured. After achieving sustainable self-reproduction of fixed assets, the state-owned part of the capital of PJSC can be privatised.

Rational Forms of State Support for Russian Road Goods Carriers

Considering the studied legal possibilities of state support for international road goods carriers, the following recommendations are proposed for practical use. Possible urgent measures include:

• Temporary cancellation of the recycling fee, at least for vehicles of ecological class 6, as well as for new semi-trailers and trailers (we can quote an example of the Decree of the President of the Republic of Belarus dated March 20, 2021 No. 123 «On measures to develop international road transportation of goods»).

• Abolition of transport tax. The corresponding budget revenues are already collected in the form of excise taxes on fuel.

• Extension of the procedure for reducing the calculated transport tax by the amounts paid according to the «Platon» system[8] in relation to vehicles engaged in international transportation.

• Reduction of the rate of insurance premiums on the wage fund of small and medium-sized businesses engaged in foreign economic activity (regardless of the tax regime applied by such entities).

• Ensuring the possibility of using a decreasing coefficient when establishing insurance premiums in respect of Motor Third Party Liability Insurance (MTPL) policies for vehicles carrying goods and passengers in international traffic. The reason for this is the high level of en route discipline and qualifications of the crews of the respective vehicles.

• Creation of a mechanism for reimbursing VAT amounts on a reciprocal basis for residents of the EAEU member countries when they purchase goods (works, services) on the territory of other EAEU countries, including for international road carriers when purchasing motor fuel and other goods (services).

The analysis of the experience of the existing mechanisms of subsidising by foreign investors of carriers engaged in export transportation made it possible to establish that these mechanisms are diverse and are constituent elements in the overall package of measures taken to increase the export potential of their countries. Along with measures to support carriers, including subsidising leasing rates for renewal and modernisation of the vehicle fleet, establishment of customs duties, tax incentives, in case of insufficient measures to ensure equality of competitive conditions for national carriers, it is also possible to:

• Limit quotas for issued permits for international transportation.

• Stimulate the competitive party to an unequal exchange of transit permits for transport permits to (from) third countries by restricting transit travel through the territory of a country.

To timely consider the risks of negative imbalance in foreign trade and of reducing export potential, as well as to develop and adopt an exhaustive package of measures to support

[8] Platon Electronic Toll Collection (ETC) system was introduced to facilitate and process the collection of toll charges offsetting the damage caused to Russian Federal Highways by vehicles exceeding 12 tonnes of gross vehicle weight (HGV N3 sub-category). [Electronic resource]: https://platon.ru/en/about/. – *Translator's note.*

national sectors of the economy, including subsidising international road transportation, public authorities can more actively use automated remote monitoring and control systems based on modern information and communication technologies and intelligent transport systems.

Government programs to support road carriers are often narrowly focused and adopted for a limited time. Since international road carriers miss domestic sources of financing for reproduction of the vehicle fleet, there is a need to create an economic mechanism, as well as scientific and methodological foundations of an integrated approach to solving the scientific and economic problem of renewal of fixed assets. It is necessary to create an economic mechanism to ensure that carriers accumulate their own funds using both public-private partnerships and venture financing for renewal of vehicles used in international traffic [10]. Development and implementation of this mechanism will have a positive impact on the competitiveness of Russian road carriers.

To support organisations engaged in international road goods transportation, JSC NIIAT has developed a methodology that ensures an expanded reproduction of vehicles.

The methodology includes:

• Analysis of the structure of the fleet of organisations carrying out international goods transportation per service life of vehicles.

• Analysis of financial performance of organisations and tariffs for transportation.

• Creation of PJSCs with participation of state capital.

• Government subsidies or interest-free lending to support the initial acquisition of two new vehicles, allowing depreciation to be charged.

• Accrual of depreciation on vehicles according to the sum of the number of years with the mandatory accumulation of accrued funds. The accumulated funds must be placed in reliable banks and bring interest income for carriers for the use of the funds by credit institutions.

• Purchase of the third vehicle at the expense of depreciation deductions from two previously acquired cars at the expense of state support funds at a point in time corresponding to half of the useful life of the first two vehicles.

• Regular purchase of a new vehicle every four years at the expense of accumulated depreciation deductions.

• Assessment of competitiveness of a joint venture based on comprehensive accounting and comparison of economic and environmental performance with other organisations operating in the international freight transport market, according to the recommendations [21].

CONCLUSION

Currently, the competitiveness of Russian international road goods carriers is significantly limited due to significant deterioration of the car fleet of vehicles and their incomplete compliance with environmental requirements and standards. Most carriers do not have their own sources of funds to invest in a timely renewal of the fleet and in expanded reproduction of fixed assets.

The analysis of the known approaches has shown that at present there is no generally accepted methodology for solving the problem of effective renewal of carriers' fixed assets. The use of lending and leasing for these purposes is significantly limited due to the poor paying capacity of carriers and the lack of a clear perspective for their successful development.

Studies have shown that the automotive industry needs government support. To support organisations that perform international road haulage, a set of measures has been proposed to ensure an expanded reproduction of vehicles while implementing private-public partnerships. It is also possible for the state to use organisational and legal forms of support for the road transport business.

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