URBAN VEHICLE FLEET RENEWAL: MUNICIPAL LEASING AND FINANCING OF REPLACEMENT

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ABSTRACT

The fleet of urban passenger transport has a constantly growing physical and moral deterioration. And it is necessary to have time to refurbish it and to replace. However, this task is becoming a problem due to the lack of financial resources. Previously, in Russia renewal was carried out at the expense of depreciation of fixed assets of transport enterprises. Now according to regulations it has to be done at the expense of profit, which entails certain losses and requires to look for reliable sources of targeted funding. The article refers to the study of possible sources of funding of renewal of urban passenger vehicle fleet, their optimal use, and their impact on the development of urban mass transit systems. Target budget funding and depreciation deductions, private public partnership in the form of so called municipal leasing are considered with regard to Russian urban public transport.

Keywords: vehicle fleet, urban passenger transport, savings, depreciation of fixed assets, vehicle fleet renewal, replacement, municipal leasing, financing of renewal.

Background. *The innovative concept of sustainable development of urban transport systems [1, 2] has become widespread in urban planning and transport management. At the same time, systemic problems of passenger transport in cities remain [3] as follow:*

- *improving quality and efficiency of passenger transportation;*
- *creation of an equally accessible transport environment for all users, including those for people with limited mobility;*
- *reduction of environmental pollution;*
- *improving safety of passenger transportation and traffic;*
- *rationalization of responsibility for transportation for public legal entities, business and civil society institutions;*
- *efficient use of urban land;*
- *formation of a modern transport infrastructure;*
- *implementation of scientifically based planning for development of urban passenger transport (UPT) and its infrastructure;*
- *improvement of legislation regulating the work of passenger urban transport and law enforcement practices.*

The success of solving each of the problems is largely determined by the use of modern vehicle fleet for transporting passengers, which is the main cost and active part in the production process of fixed assets of land types of UPT. In general, the fleet of passenger vehicles in cities has significant physical and moral deterioration. Only due to physical wear and tear, more than half of buses, trolleybuses and tramcars operating on the routes in Russia are subject to replacement. Continuous and economically justified fleet renewal in such a complex reality requires extraordinary actions by the authorities and the transport organisations themselves.

Objective. *The objective of the authors is to consider different aspects of urban passenger vehicle fleet renewal in terms of municipal leasing and renewal financing.*

Methods. *The authors use general economic methods, comparative analysis, evaluation approach, legal analysis, particular methods of urban planning and development evaluation.*

Results.

Investments «do not catch up»

Earlier in the domestic economy, the depreciation model of ensuring renewal at the expense of depreciation of fixed assets was used. This model resulted in:

- *return of invested capital to the investor (through depreciation charges included in expenses at cost and taken into account when planning tariffs and profits);*
- *accumulation of funds for purchase of fixed assets for their replacement.*

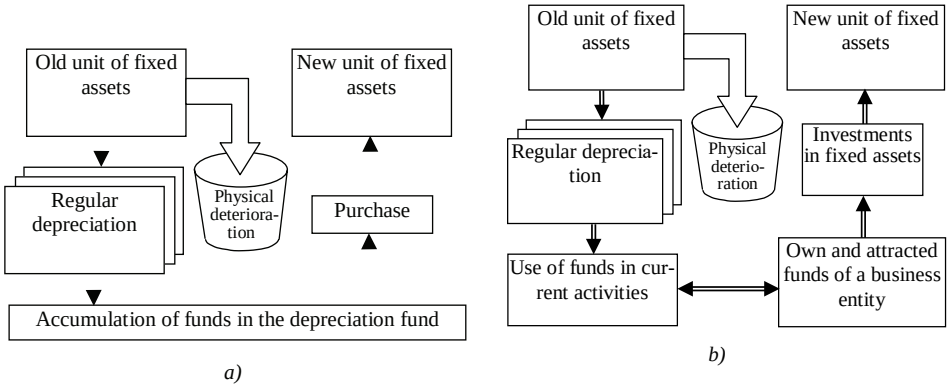
Thus, depreciation ensured simple reproduction of worn out fixed assets, and new investments were required only for their expanded reproduction.

With the introduction of the Rule of acounting 6/01 «Accounting for fixed assets» [5] and the provisions of Chapter 25 of Tax Code of the Russian Federation, the second of mentioned tasks is largely not solved for the following reasons. The traditional model of the use of depreciation was based on the purchase of new property in order to replace similar property that had been physically worn and related to the fixed assets. Depreciation charges were accumulated in the depreciation fund, and then used to pay for the acquired new fixed assets (Pic. 1a) [4]. Therefore, a cycle of financial resources once invested in fixed assets was organized. Additional investment was required only to ensure expanded reproduction and to compensate for current growth of cost of new fixed assets.

In the current legal and economic conditions, depreciation is not considered as a directly operating mechanism that ensures timely and complete renewal of fixed assets of an economic entity.

According to the existing procedure for recording expenses and income, the acquisition of fixed assets is treated as an investment activity. The depreciation charges included in the prices and tariffs are not cumulated anywhere (there is no depreciation fund now), and as part of the revenue they are used in turnover for making current payments (Pic. 1b) [4]. Return of invested funds and renewal are carried out only from the profit. Cycle of once invested financial resources for the purposes of renovation is not carried out, since each investment and renovation cycle are implemented independently. The need for an investment method of renovation (that is, purchase of fixed assets at the expense of profits) has the consequence translated into additional costs in connection with payment of income tax.

Consideration should also be given to a significant increase in the price of vehicles over their lifespan (both due to inflation and higher prices for more



Pic. 1. Depreciation cycle: a) applied earlier; b) implemented with investment financing of purchases of fixed assets.

modern fleet). Depreciation accrued over this period does not keep pace with rising prices.

Small businesses, which are especially numerous in road transport, cannot organize a cycle of depreciation charges for the purposes of renovating fixed assets (mainly the entrepreneur operates a single bus). Therefore, in small business and in bulk purchases, the acquisition of new fixed assets can be carried out exclusively in the form of one-time capital investments made from a carrier's profit or from funds raised from third-party sources.

Bulk purchase of fleet requires significant one-time investment. At the end of the service life, when vehicles are written off due to their physical deterioration, similar volume of funds will be required for investments in the simple reproduction of a worn-out fleet. Other property of the transport organization is usually worn out to a significant degree (depreciation on it was fully accrued earlier) and does not provide the current amount of depreciation charges that could be used to finance the purchase of fleet and other fixed production assets.

Thus, transport organizations do not have sufficient funds for timely renewal of their property, more than 60 % of which is fleet. Theoretically, financial depreciation of fixed assets should become the financial pillar of replacement of the fleet in the current conditions [4, 7]. However, due to the long-term subsidiary approach to reimbursement to carriers of their expenses, constantly aggravated by insufficient budget financing of public transport and inflationary processes in the economy, a situation arose in which the available funds are not sufficient even for simple reproduction of fixed assets.

Depreciation on the already fully worn part of the fleet has not been charged for a long time. In the course of renewal of the model range and upgrading of the fleet, prices for fleet are constantly increasing. The amount of depreciation does not cover even a tenth of the needs for renovation. The depreciation component as part of the revenue from transportation is constantly involved in the turnover of the assets of the transport organization. Due to the fact that these funds have already been spent (put into circulation), they cannot be mobilized at once to purchase fleet or other property. This led to formation of so-called «depreciation scissors».

Theoretically, to ensure the possibility of financing acquisition of a new bus at the expense of depreciation in the current month, the carrier should operate at least 120 buses. Then, based on the estimated service life of 10 years, monthly depreciation will be charged on the entire fleet, sufficient to purchase one new car. But even in this case, additional money will be needed to compensate for the increased bus price in comparison with the prices of the operated analogues purchased 10 years ago. As a result, the purchase of a new bus, in fact, will have to be made in the form of one-time investment at the expense of a businessman himself. This will automatically lead to an increase in the tax burden on the carrier, which will require additional finance.

Practically, investments in purchase of new fleet are often made at the expense of budget funds irrevocably provided annually to large transport companies (the so-called «budget gift»). In the total amount of funds allocated for purchase of fleet, the share of the budget comes to 85–90 %. Those practices lead to the following negative consequences:

• significant budget funds are spent annually (up to 4 % or more of the municipal budget) that cannot be replenished by carriers who have become accustomed to constant budget gifts and have ceased to think about establishing an economically correct reproduction procedure for worn out fixed assets;

• depreciation mechanism as a way to ensure renewal in the urban passenger transport is not valid, and the accrued depreciation is sprayed and the corresponding resources are spent on current goals.

Leasing partnership

It is not possible to reverse the considered negative trend by mobilizing its own sources of financing by transport organizations.

Leasing, which in the modern economy is a fast-growing sector of financial services, is capable to solve the problem of fleet renewal.

A special effect is promised by the use of private-public partnership in the form of the so-called «municipal leasing», the order of relations of the parties of which is described in [4]. The basic principles of municipal leasing:

• synthesis of internal political and economic approaches to the problem of providing public transport with fleet;

• integration of efforts of business, state (municipal) authorities and management and various institutions of society in the interests of passengers;

• differentiation of the size and forms of dividends received by the leasing project participants;

• use of scale effect due to concentration of leasing operations;

• reliance on production capabilities of domestic fleet manufacturers.

The main idea of municipal leasing is that it is opposed to the current practice of procurement of

Table 1

The composition of participants in the leasing project and their interests

Legal status of the participant (founder)	Method of formation of capital of the company	What is of the interest for the participant
1. The executive authority exercising disposal of state or municipal property.	One-time transfer of budgetary funds, usually allocated to the purchase of new rolling stock for UPT.	No cash dividend is required. In return, the urban economy receives leasing items cheaper than usual. Therefore, dividends come in the form of political capital –solution of social problems of the city.
2. Commercial organizations not mentioned in the table below	Any permissible, mainly in the form of transfer of funds.	Receiving ordinary dividends in cash or in the form of various natural rights granted by the city.
3. Factories – producers of leased assets (primarily, buses, trolley buses and tram cars).	It is possible to transfer to the credit of the share of contributed capital of finished products – leased assets.	The launch of the mechanism for production and marketing of leased assets under the control of a representative of the manufacturer on the company's board. In this case, the plant's dividends may be minimal – it will receive the main advantage through profit from the sustainable sales of products.
4. Banks and other credit and financial institutions that are agents of payments for state and local government bodies.	Cash, agency services.	Preservation of established agency relations with the authorities when receiving moderate dividends in cash and in the form of natural rights granted by the city.

rolling stock by various transport organizations separately. Advantages are provided through concentration of efforts focused on purchase of fleet in a single center. Such a center can be a specially created joint-stock company, or it can exist as an association established by executive bodies authorized to dispose of public transport property with participation of leasing companies, vehicle manufacturers and transport organizations.

The main economic differences from traditional leasing schemes are involvement of a wide range of legal entities and flexible regulation of the system of interests and dividends for participants in the center's activities (Table 1).

Due to the large number of participants from different cities of Russia, it becomes possible to purchase vehicles from manufacturers in large quantities, which means at the lowest price. Perspectives are being opened for a clear and reasonable determination of the need for fleet, which gives grounds for targeted development and launching into production of a rational number of vehicels of a standard range of buses, trolleybuses and trams. Plants receive a guaranteed production program for the foreseeable future. Financial prerequisites are being created for expanding the output of vehicles secured by effective demand. It should be noted that these advantages are especially valuable in terms of enhancing the activities of domestic producers.

To finance this project, instead of annually produced one-time injections of budget funds for renewal of fleet, a cycle of once-allocated financial resources should be organized. There is a chance to put an end to the vicious practice of spending irrevocably consumed money on «budget gifts» to carriers.

Vehicles' leasing is also beneficial for the final recipient of the transport service who is the passenger. He pays for transportation according to the tariff and, as a taxpayer, participates in financing transport from centralized sources. Therefore the passenger is the most important subject of economic relations and the main source of financial resources. For a passenger of municipal transport, the use of leasing entails improvement in the quality of transportation services by increasing frequency and regularity of traffic on routes, as well as rationalizing the use of tax payments.

It should be noted that availability of municipal leasing does not exclude centralized budget financing for development of UPT [8].

In the case of a municipal leasing scheme, the depreciation amounts included in the cost of services rendered are not subsequently disbursed to finance various payments, but are earmarked for simple reproduction of fixed assets. To form sufficient resources for fleet renewal (simple reproduction), it is advisable to add a portion of net profit to depreciation amounts. Expanded reproduction of fixed production assets will always require additional funding, and two situations are possible:

- *firstly, if expanded reproduction is carried out on the initiative of the transport organization, it must find additional funds on its own;*
- *secondly, if extended reproduction is carried out on the initiative of external bodies (the customer of municipal transportation), it is fair to believe that they should also provide additional funding.*

In reality, for UPT carriers, as a rule, there is no opportunity to use domestic sources of financing due to lack of funds. Everywhere there are statements about unprofitability of their activities due to centrally set tariffs (socially favorable, but commercially unacceptable). Unprofitable transportation of passengers by public transport is explained by the inability of state (municipal) customers to finance in accordance with the size of existing funds.

This problem is intended to be solved by the Federal Law of July 13, 2015 No. 220-FZ «On the Organization of Regular Transportation of Passengers and Baggage by Automobile and Urban Electric Transport in the Russian Federation and on Amendments to Certain Legislative Acts of the Russian Federation» The law establishes, figuratively speaking, the principle of «cut the coat according to the cloth». Namely, the executive authorities are obliged to organize and finance transportation at regulated tariffs on routes. The development of a system of such routes should be carried out within the limits of the funds available for their financing.

The rest of the transportation can be carried out on the terms of unregulated tariffs.

Depreciation and compensation

In accounting, any of four methods of depreciation are allowed:

a) linear;

b) decreasing balance;

c) write-off of value by the sum of numbers of years of useful life;

d) write-off of value in proportion to the volume of production.

For passenger transport, the volume of production for a certain period of time is expressed by one of the following indicators:

a) volume of traffic, pass.;

b) passenger turnover, pass.-km;

c) vehicle mileage on routes, km.

In the works [6, 7] recommendations on the choice of the most rational method of depreciation, taking into account various schemes of transport organization are presented. Each of the methods in its own way affects the rate of accumulation of depreciation.

With the linear method, the accrued depreciation amount remains unchanged within the period (year) referring to it.

When using the declining balance method, larger amounts of depreciation are charged initially (accelerated depreciation). In subsequent accounting periods, amounts are progressively reduced. This method is not recommended for accumulation of funds for reproduction, since the amount of accrued depreciation will not be equal to the initial cost even for the entire service life of an object.

The best conditions for accumulation of own funds for reproduction of the fleet through accumulation of depreciation allowances are provided by means of the sum of the numbers of years and in proportion to the mileage. In these cases, most of the depreciation amount accumulates during the first half of the useful life of the property. In addition, both methods allow compensation for the effects of inflationary price drift on depreciable objects [7, 10].

Accrual of depreciation is in proportion to the volume of products produced taking into account the ratio of the initial value of the asset and the estimated amount of the product created for the entire useful life of this object. This method is appropriate for the fleet with an established rate of depreciation in percent of the cost of the vehicle for every 1000 km of its mileage. In this case, a more complete compliance of the calculated (accrued) depreciation of property and its actual depreciation (determined by mileage) is ensured, which allows speeding up formation of the amount of funds required for acquisition of new property.

When calculating depreciation in proportion to the volume of products, its rate is set equal to the ratio of the original book value of the vehicle C_{PB} *to its normative mileage* L_N *before being written off over an accounting period:*

$$N_A = \frac{C_{PB}}{L_N}, \text{ rub./km.} \qquad (1)$$

The amount of accrued depreciation for the accounting period will be:

$$A = L_{RP} \cdot N_A, \qquad (2)$$

where L_{RP} *– mileage for the accounting period.*

Accrual of depreciation in proportion to the mileage most corresponds to the physical wear of vehicles [6, 7].

Depreciation accumulations for full reproduction of fixed assets are determined by the balance on regulatory account 02 «Fixed assets depreciation». It is designed to take into account the residual value of a fixed asset and cannot be used to establish the source of funding for their renewal.

The amount of funds required to finance the renewal is established by calculation. To do this, it is necessary to conduct an analytical accounting of depreciation, directed to renewal of fixed assets.

Amounts of depreciation accrued and part of the profit allocated for accumulation reserved in the current account form funds that can be used:

a) for the purposes of industrial and scientific-technical development;

b) formation of financial assets (purchase of securities, contributions to the authorized capital of other economic entities).

To ensure the guaranteed use of earmarked funds for their intended purpose, it is necessary to introduce a system that allows to form own sources for investments in renewal of vehicles [8, 10]. To do this, ideally, it is necessary to adjust the regulatory acts on accounting, fixing in it the norms according to which the lost depreciation function of fixed assets will be restored – to serve as a source for the purposes of their simple reproduction. The restored function will allow carriers to be exempted from taxation on funds allocated for renovation in the order of using previously accrued depreciation.

However, adjustment of acts of federal legislation is quite a long and complicated procedure. In the meantime, a partial solution of the problem can be achieved by linking the provision of targeted budgetary funds with the obligations of transport organizations that receive the relevant resources to accumulate depreciation on them during the entire useful life. As a result, this will provide an amount equal to the original cost of the vehicle being operated, to which additional money from the net profit will need to be added in order to have enough of them to purchase a new vehicle.

During the useful life of non-current depreciable assets, funds are withdrawn from the target financing accounts periodically.

Means of target budget financing will be used effectively if the transport organization creates legal, economic and organizational conditions for formation of its own sources of fleet renovation.

The fact is that depreciation accrued on a vehicle acquired at the expense of earmarked budget funds is included in the cost of work performed and is reflected in the financial results of the organization of transport at the «Other income and expenses» account.

To ensure profits for passenger transport organizations, it is necessary to reimburse transportation costs (including depreciation) and lost revenue by public transport, arising from the availability of privileges and advantages of tariffs established by laws or other regulatory legal acts of the Russian Federation, federal entities of the Russian Federation and municipalities in full volume at the expense of the budgets of the respective levels [9].

Instead of conclusion

In the framework of the problems and options for renovation of the fleet of urban passenger transport and taking into account the lack of sufficient funds in

the local budgets and the budgets of the regional entities of the Russian Federation, it seems reasonable and possible:

• to ensure creation of targeted budget funds to support development of passenger transport (for example, at the expense of penalties for violation of traffic rules and parking fees), to finance regular transportation by road and urban electric transport (including formation of sources of financing for renewal of the fleet for passenger transportation);

• to carry out at the expense of target budget funds one-time target budget financing of acquisition of the feet with subsequent control of accumulation of depreciation deductions and their targeted use to ensure the subsequent transition to self-financing vehicle renewal;

• to make changes to the regulatory legal acts of the federal legislation to improve the depreciation policy by ensuring the targeted use of the corresponding depreciation deductions only for urban passenger vehicle fleet renewal;

• to recommend the use of the depreciation method – in proportion to the vehicle's mileage – in order to ensure that the actual depreciation of the fixed asset is consistent with the amount of accrued depreciation.

These recommendations, we believe, will help to solve the problem of financing of renewal of fleet of urban automobile and electric passenger transport of public use.

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