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PROBLEMS AND PROSPECTS OF INNOVATIVE PUBLIC TRANSPORT DEVELOPMENT PROJECTS FOR THE ECONOMY OF RUSSIAN REGIONS

Abstract: *the results of research on the necessity and prospects of innovative projects for the development of the city's transport infrastructure are presented. Based on the literature review and statistical data, the multiplicative socio-economic effect of the projects was revealed. Despite their promise, there are a number of problems that limit the introduction of innovations and lead to negative consequences. Using the example of Moscow, an approach to solving the accumulated problems in the city's transport complex is presented.*

Keywords: *innovative projects, public transport, unmanned tram, efficiency, economy, region.*

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ПРОБЛЕМЫ И ПЕРСПЕКТИВЫ ИННОВАЦИОННЫХ ПРОЕКТОВ ПО РАЗВИТИЮ ОБЩЕСТВЕННОГО ТРАНСПОРТА ДЛЯ ЭКОНОМИКИ РЕГИОНОВ РОССИИ

Аннотация: *представлены результаты исследования необходимости и перспективности инновационных проектов для развития транспортной инфраструктуры города. На основе обзора литературы и статистических данных выявлен мультипликативный социально-экономический эффект от реализации*

проектов. Несмотря на их перспективность, существует ряд проблем, которые ограничивают внедрение инноваций и приводят к негативным последствиям. На примере Москвы представлен подход к решению накопившихся проблем в транспортном комплексе города.

Ключевые слова: *инновационные проекты, общественный транспорт, беспилотный трамвай, эффективность, экономика, регион.*

Innovative infrastructure projects in the transport sector play an important role in the development of the regional economy through the digital transformation of urban public transport, which leads to an increase in its environmental friendliness and comfort, the development of alternative mobility, the discouragement of movement by cars, and more. The importance of the issues raised determined the choice and relevance of the topic.

In accordance with the law «Fundamentals of the State Policy of Regional Development of the Russian Federation for the period up to 2025» published in early 2017 [1], the main goal of the modern regional policy of the Russian Federation is to ensure sustainable growth and development of the regions. Solving the problems of providing cities with modern innovative transport, energy and engineering infrastructure that have accumulated over the past decades has been declared one of the top priorities in achieving the goals of the state policy of regional development [2].

The conducted research has shown that [3; 9–11]:

1) the transport infrastructure is the most investment-attractive in the world;

2) the impact of transport infrastructure on regional development is ambiguous;

3) innovative projects in the transport sector, both in developed and developing countries, have a high degree of efficiency and a positive impact on public welfare and quality of life;

4) the implementation of innovative projects in the transport sector has a multiplicative socio-economic effect (Table 1).

Table 1

The multiplicative socio-economic effect of innovative projects for the development of public transport (compiled by the author on the basis of [3; 9; 10; 13])

<table>
<tr><th>Project Parameters</th><th>Environment Settings</th><th>Infrastructural effects</th><th colspan="2">Socio-economic effects</th></tr>
<tr><td rowspan="3">Speed of movement, frequency of communication, reliability of transportation, multimodal capabilities</td><td rowspan="3">→</td><td rowspan="3">Reduced travel time for passengers and cargo</td><td>Population growth in the agglomeration</td><td rowspan="3">Productivity growth of economic agents</td></tr>
<tr><td>Reduced transportation costs</td></tr>
<tr><td>The growth of foreign trade</td></tr>
<tr><td>CAPEX</td><td colspan="2">→</td><td>Investment growth</td><td>↓</td></tr>
<tr><td></td><td>Growth of passenger and cargo traffic</td><td>→</td><td>The growth of output in the transport industry and related other industries</td><td rowspan="4">GDP Growth (VPR)</td></tr>
<tr><td>Throughput capability</td><td>→</td><td>Sealing bottlenecks</td><td>The growth of industrial production</td></tr>
<tr><td></td><td>The growth of the investment attractiveness of the surrounding areas</td><td>→</td><td>The growth of investments in integrated territorial development (CCT) projects</td></tr>
<tr><td>Traffic safety</td><td>→</td><td>Reducing the number of accidents</td><td>Reduction of deaths and injuries</td><td>↓</td></tr>
<tr><td>Environmental impact</td><td>→</td><td>Reducing harmful emissions into the atmosphere</td><td>Reducing the negative impact on the environment</td><td>Budget revenue growth</td></tr>
<tr><td></td><td>Increasing the quality of life in cities</td><td>→</td><td>Rising property values</td><td>↑</td></tr>
</table>

However, currently cities practically do not invest in the development of land-based public transport, which, of course, leads to a number of problems. These include environmental pollution, the destruction of the cultural and natural landscape of cities, a decrease in the speed of movement of citizens as a result of congestion of highways, etc [4; 5].

The reasons limiting the effective innovative development of transport infrastructure, including urban public transport, include [5]:

1) lack of interconnection between elements of transport infrastructure and business entities;

2) the subordination of different types of transport varies;

3) insufficient development of information flows and the introduction of IT technologies in the transport industry and others.

The development and optimization of urban public transport, as part of the transport industry, is one of the important regional problems in the context of urbanization. This problem is relevant in all megacities of the world (New York, Paris, London, Hong Kong, Singapore and others) [12].

The key drivers of the growth of the investment attractiveness of the innovative transport complex in the world are [14]:

– the growth of the world's population according to the UN forecast is up to 8.5 billion. man by 2030;

– urbanization of the global population: an increase in the proportion of people living in cities from 52% today to 58% by 2030 and 70% by 2050.;

– outstripping the growth of household incomes;

– development of international trade and tourism and others.

The problem of efficient functioning of the transport sector within the city is also acute in Russia. To solve the problem, the Moscow city authorities proposed «conducting parallel strategies [15] (Table 2).

Table 2

Strategies for the development of transport infrastructure in Moscow

№	Name of the strategy
1	To encourage people to use public transport by building comfortable rail transport (trams, metro)
2	Creating a convenient pedestrian infrastructure
3	Discouraging the movement of cars within the city

In addition, the Moscow City Government conducted large-scale marketing research with the participation of the city's residents. As a result, the main problems of

the population were identified in terms of the state of the urban transport system (Table 3).

Table 3

Priority of problems of Moscow residents in the state of the city's transport system [6]

№	Problem name	Value, %
1	High noise level	81
2	Poor air quality	69
3	Bicycles or scooters interfere with pedestrians on sidewalks	56
4	A courtyard parked by cars	45
5	The culture of passenger behavior around	39
6	Traffic congestion	33
7	The cost of a taxi ride is too high	31
8	High speed movement of cars in courtyards and block streets	29
9	Lack of places for comfortable walks	28
10	Dangerous behavior of some drivers on the road	27

Based on the results of the conducted research, as well as the provisions of the «Transport Strategy of the Russian Federation until 2030», the Government of Moscow, together with the Department of Transport and Development of Road Transport Infrastructure of the city and the Department of Civil Engineering, developed the State Innovative Program «Development of the Transport System» [7]. It includes a number of subprograms, including the development of the subway, urban land passenger transport, rail and water transport, highways and road networks, the creation of an intelligent transport system, etc.

If we talk about the digital transformation of trams, then this innovative project area is given priority, as it is not only one of the most popular and beloved modes of transport for Muscovites, but also the most environmentally friendly and safe. The implementation of this project, within the framework of the Program «Development of the transport system», due to its innovative result (unmanned tram control) significantly increases the socio-economic level of development of the region, namely [6,8]:

– improves the ecology of the city;

– reduces the number of accidents and increases the comfort of the urban environment;

– improves the quality, safety, and comfort of tram rides;

– reduces the amount of «congestion» or «traffic jams»;

– increases the speed of movement of passengers by transport (by 25%);

– increases the capacity of rolling stock;

– reduces the waiting time for transport (trams) in the city center (5 minutes instead of 15 minutes).

Thus, innovative approaches based on the digital transformation of the existing urban transport system are necessary and aimed primarily at ensuring modern consumer expectations, compliance with regulatory requirements for the quality, safety and environmental friendliness of the transport services provided. The prospects for their development open up new horizons for researchers and manufacturers of public urban land transport. The high social efficiency of innovative projects in the public transport sector has a significant impact on the development of the regional economy, including by increasing the efficiency of the city's entire transport system and improving the well-being of the population.

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