

## VORONEZH TRANSPORT PLANNING: DEVELOPMENT PROSPECTS

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**Abstract:** The article briefly examines the main aspects of transport planning in Voronezh and emerging problems.

**Keywords:** planning, development, transport.

## ТРАНСПОРТНОЕ ПЛАНИРОВАНИЕ ВОРОНЕЖА: ПЕРСПЕКТИВЫ РАЗВИТИЯ

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**Аннотация:** В статье кратко рассматриваются основные аспекты транспортного планирования в Воронеже и возникающие проблемы.

**Ключевые слова:** планирование, развитие, транспорт

Transport planning in modern conditions of the functioning and development of socio-economic systems is the process of developing and implementing plans for the development of transport infrastructure, objects and subjects of sustainable and safe functioning of transport in the provision of transport services. Transport planning should initially include the analysis of retrospective information on the functioning of transport, and then the development of traffic routes, the selection of rolling stock, the organization and management of transport systems, and so on.

Transport, being one of the key factors in the development of the territory and improving its level of living, plays an important role in the socio-economic system of the country. Therefore, issues of transport planning do not lose their relevance.

Voronezh is the largest city in Russia, and its transport system requires constant development in order to operate sustainably. When considering issues of transport planning at the initial stage, it is necessary to have an idea of the transport structure and existing modern technologies in transport. [1, 2]

Let us take a brief look at the classical transport structure, which forms a kind of transport «framework».

The transport «framework» of a territory is a unique system of transport «arteries» connecting various areas of the territory and serving as the basis for the development of transport infrastructure. This «framework» includes the road network, railways and waterways, airports, metro, and so on.

The publicly accessible modern transport infrastructure of Voronezh includes the identification of main public transport routes, reconstruction and construction of new interchanges and bridges, development of the road network, and so on.

For overall accessibility, public urban passenger transport should be given great importance in transport planning. Despite the fact that Voronezh already has an extensive route network of public urban passenger transport, the increase in motorization has led to congestion of the road network, which has led to a decrease in the quality of transport services (congestion and emergency situations, road accidents, environmental damage, etc. further). The development of public urban passenger transport should include increasing the number of modern rolling stock, improving the quality of services, introducing new technologies in transport and expanding the route network. These measures will invariably lead to an increase in demand for public transport and a decrease in the use of private vehicles. Attention should also be paid to the development of public urban passenger transport in terms of integration or synthesis of traditional rolling stock (buses) with high-speed trams, the metro, and so on. [3, 4]

The development of public urban passenger transport and the organization of transport services and the safety of the transport process are difficult to implement without

the reconstruction, development and construction of existing and new roads and interchanges. The process of updating and creating a road network helps reduce the load on the existing network, reducing the negative impact of rolling stock on people and the environment. The implementation of such plans requires significant investment. In particular, it is therefore necessary to attract private investment and use public-private partnership mechanisms.

The next promising area of transport planning is the development of infrastructure for cyclists and pedestrians. It should include the creation of safe and comfortable conditions for users (cyclists and pedestrians), since walking and cycling are accessible, environmentally friendly and beneficial for a person's physical well-being.

Another promising area of transport planning is the integration of the established transport system with other systems. In this regard, mechanisms are being created for the joint work of different modes of transport, for example, by developing common routes or using a common transport infrastructure, where passengers can easily transfer from one mode of transport to another.

It is worth noting that modern information technologies make it possible to introduce artificial intelligence into the transport system; for example, machine learning algorithms can analyze data on passenger flows, congestion and road conditions in order to predict developments and prevent negative consequences.

More developed territories in their transport planning have already reached the level of introduction of electric and unmanned vehicles into the transport infrastructure, which can significantly reduce the number of emergency situations and traffic accidents, congestion, and electric vehicles can reduce air pollution.

In conclusion, it should be noted that transport planning in Voronezh requires an integrated approach that takes into account all aspects of the existing urban transport system. The implementation of these measures will improve the quality of life of the population and make the city more attractive for residents, domestic tourism and business activity.

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