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STREET-ROAD NETWORK IN THE CITY OF TASHKENT ABOUT DENSITY

DSc., Prof. Khotamov A. T.
Assoc. Talipova N. Z.
Assoc. Kadabaeva Sh. S.,
Assoc. Omonova D. F.
TAQU, Department of Urban Infrastructure

Abstract
The density of the street-road network of the city of Tashkent is compared to the large cities of Europe and other developed countries.

Keywords: Transport infrastructure, street-road network, street-road network density, optimal density, urban area, population density.

Introduction

Today, in modern cities, the street-road network forms the basis of the urban transport system, and the demands placed on them are increasing year by year.

Today, it is no secret that the development of transport infrastructure plays an important role in the development of economic sectors. In this regard, in accordance with the implementation of the measures implemented within the framework of the "New Development Strategy of Uzbekistan for 2022-2026" organized by the initiative of the President of our Republic, Sh. Mirziyoyev, and in accordance with the state of achieving the set target indicators, a specific plan of activities was determined on the 7 priority directions of the development of the Republic of Uzbekistan and they are being implemented step by step. In particular, the issue of "Improvement of the public transport system and development of its infrastructure in Tashkent city and its regions" specified in point 3.36 is focused on this part of the urban planning activity and requires the need for further development of this infrastructure [1].

It is appropriate to interpret this infrastructure in the following hierarchical form:

- on the cross-border scale - the indicator determining the country's place in the field of transport communication in Central Asia;
- at the country level - this is an indicator of coverage of all regions of the country with transport infrastructure;
- at the regional level - an indicator of the development of transport infrastructure in terms of interconnection of one or more neighboring regions;
- at the level of cities - this is the indicator of coverage of our existing cities with this infrastructure in terms of transport types based on their position;
- the degree of interconnection of the functional parts that make up the city with the transport system;
- indicators of the development of transport infrastructure in microdistricts, industrial zones, administrative areas, commercial areas, recreation areas, etc., forming functional parts.

The degree of interconnectedness of the city and its functional parts with the transport system, in turn, the indicator of the development of the transport infrastructure in the areas that make up the functional parts and how rational the solution of these issues is, is manifested in this area not only by the development of the transport infrastructure, but also as a manifestation of modern urbanization in terms of other complex indicators.

In the experience of world urbanism, one of the main indicators determining the level of development of transport infrastructure is the density of the city street-road network (δ). This indicator is characterized by the ratio of the length of the street-road network to the city area.

The density of the city's total street-road network is derived from the ratio of all streets in the city of Tashkent to the total area of the city :

$$\delta_{um} = L/S = 2380.6km/334.8km^2 = \boldsymbol{7.11\ km/\ km^2}$$

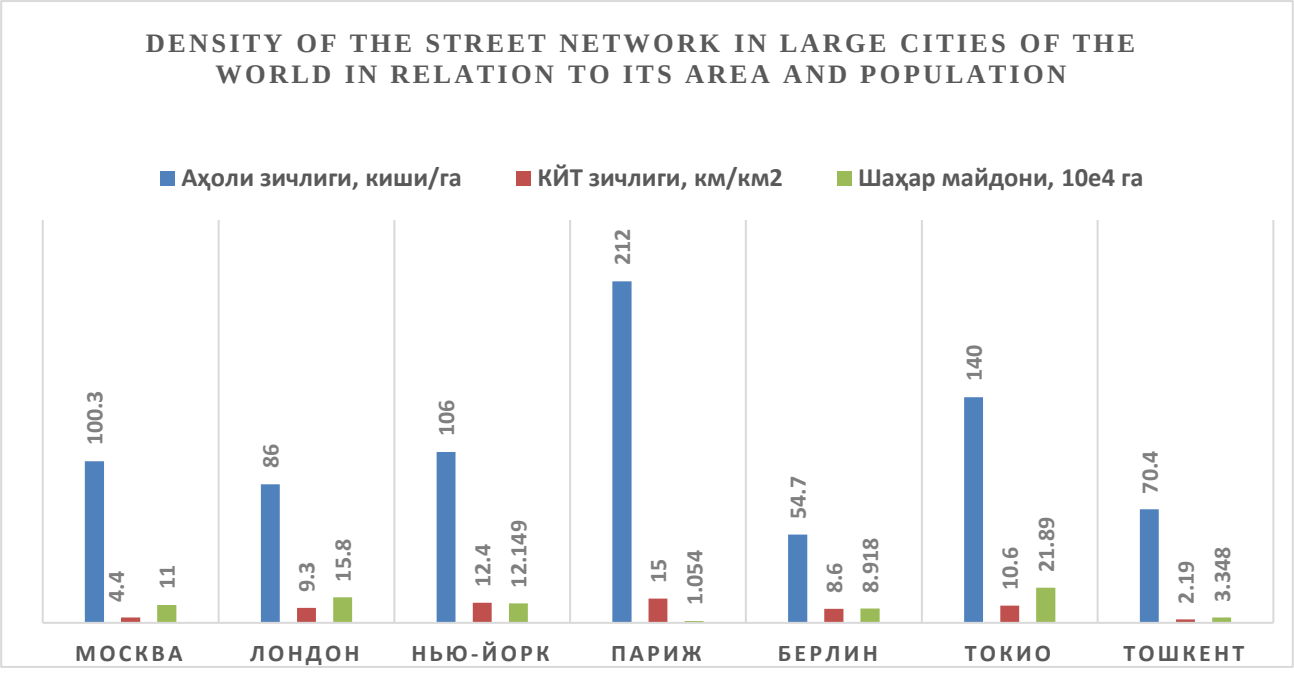
where δ_{um} - the density of the total street-road network of the city of Tashkent;
L_{um} - the length of the general street-road network [2];
S - total area of Tashkent city.

Similarly, **the density of the main street-road network of the city in relation to the main streets** is derived from the ratio of the main (public transport) streets in the city of Tashkent to the total area of the city:

$$\delta = L_{as}/S = 735.4km/334.8km^2 = \boldsymbol{2.19\ km/\ km^2}$$

where d - the density of the main (public transport) street-road network of the city of Tashkent;
L_{as} - the length of the main (public transport) street network [2].

What is this indicator in other major cities of the world? We will analyze it through the following histogram.



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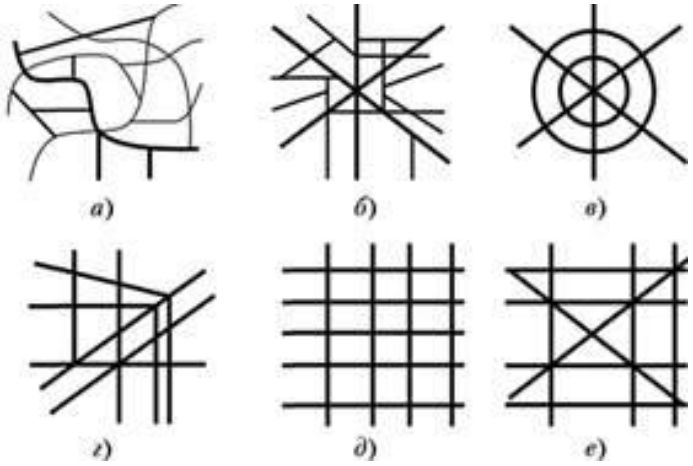
As can be seen from the figure, the density of the street network in Tashkent is very low compared to other comparable cities (with the exception of Moscow).

According to the current (former union) norms, the density of the street-road network, with the distance between them being 0.5-1.0 km δ = 2.2-2.4 km/km ^{2} [4].

The rational distances between main streets on which city public transport runs are usually determined by the condition that they do not exceed 400-500 m from the place of residence or place of work of city residents to the nearest station.

In urban planning, the indicator of the density of the street-road network depends on another important factor, which is the coefficient of nonlinearity of the street-road network (K_n) . The size of this coefficient depends on the scheme of the city street-road network. It is known from the experience of world urban planning that the most optimal scheme in this regard is a diagonal rectangular scheme, which has been used in practice in several new cities in the USA. According to this scheme, K_n =1.1-1.2. In the ring circuit, this indicator is K_n = 1.5 [3].



Picture. Planned schemes of the street-road network.
a-free scheme; b-radial; v-radial-annular; g-triangular; d-rectangular; e-rectangular-diagonal.

In the street-road network of the city of Tashkent, we can see a combined scheme, that is, the central avenue zone is radial-ring-shaped, while the relatively new zones of the city (Chilonzor, Yunusabad, Sirgali...) are organized on the basis of a rectangular scheme.

The high density of the street network increases the capacity of transport vehicles in the city, but on the other hand, it requires a lot of capital, and it reduces the coefficient of efficient use of land areas, which are valuable in urban planning.

In addition, it is known from the experience of urban planning that there is a correlation between the population of the city and the density of the street-road network. That is, in small cities, cities with a population of 100-250 thousand people, the density of the street-road network δ = 1.6-2.2 km/km^2 , in cities with a population of more than 2 million, this indicator δ = 2.4-3.2 km/ km^2 . It follows that the density of the road network relative to the population of the city increases proportionally to the number of inhabitants in the city. In this regard, the city of Tashkent is still far below the average.

According to the information in this regard, we can analyze this indicator in relation to some cities in the following histogram.

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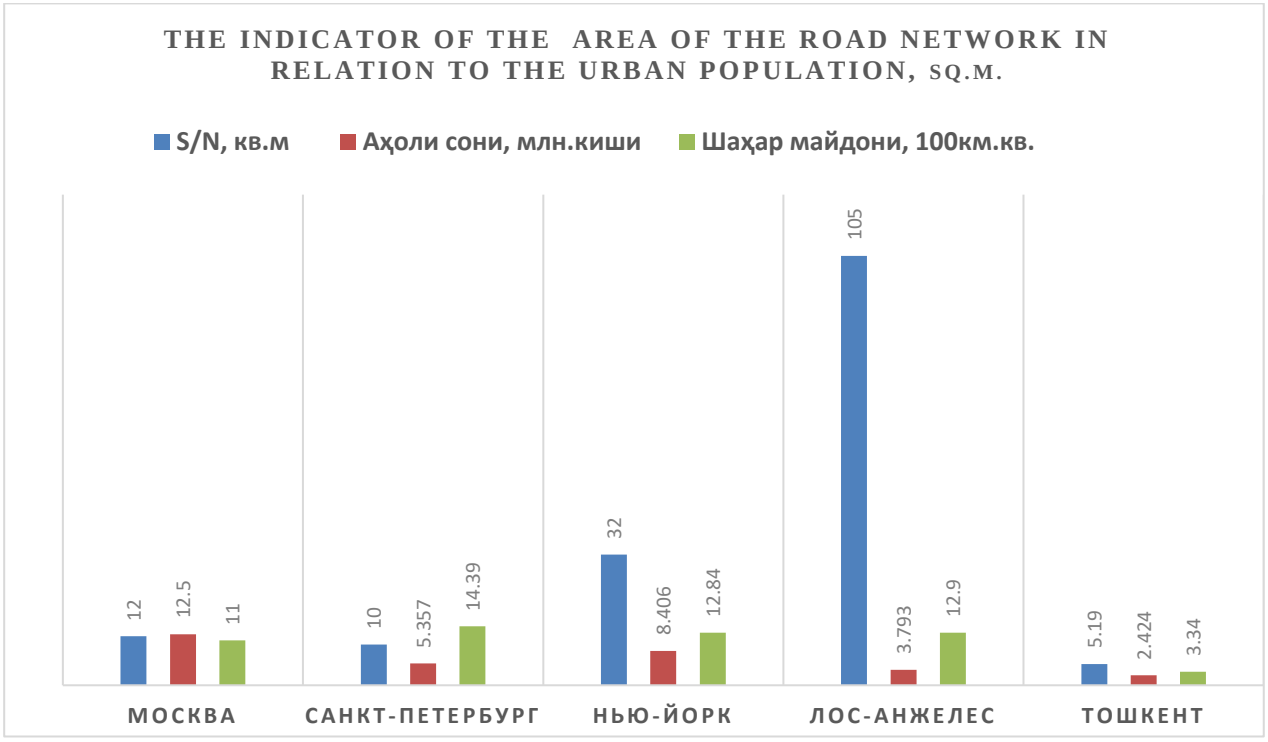

As can be seen from the picture, the area of the street network in Tashkent is very small compared to other cities with a ratio of the city's population (it is two times less than the city of Moscow, which has the smallest indicator!).

From the issues analyzed above, we conclude the following:

- The density of the street network for the city of Tashkent is very low compared to other large cities of the world, it is much less than the average $[\delta_{o'r}] = 2.4\text{-}3.2 > 2.19$ km/km ^{2} (for cities with a population of more than 2 million);
- The indicator of the area of the street network for the city of Tashkent is very small compared to other large cities of the world (2.3 times less than the city of Moscow);

It follows that the density index of the street-road network of Tashkent city is not yet at the required level. It is possible to plan new roads from some districts to increase this indicator. In this case, it is advisable to pay special attention to increase the carrying capacity of existing city highways, optimize the width of lanes, increase the number of intersections at different levels, organize underground roads, specially protected fast urban roads, etc. in the perspective plan of the city.

The transport system has a special place in urban planning. The transport system ensures the active life of city residents and increases its efficiency. Otherwise, it is impossible to imagine today's city life without a transport system. Designing and organizing transport and pedestrian traffic is one of the main problems in the architectural design of the city.

Today, such a concept prevails in world urban planning that - "...it is necessary to create more convenience for people, not for transport, that is, creating convenience for transport will lead to a constant increase in their number...", this is a concept that has been proven in the practice of developed countries.

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Of course, this concept is typical for developed countries, and if the density of the street-road network in comparable cities is 8.6-15.0 km/km^2 , this indicator is currently 2.19 (3.3 in Moscow) km/km^2 in Tashkent ? The index of the density of the street-road network of Tashkent is twice as low as that of Moscow, which is almost 3.3 times larger in terms of area. With this, we do not yet justify the concept that created the global problem of urban transport in the West and other developed countries and are opposed to it today, on the contrary, it is appropriate for us to use this experience from a critical point of view in order to achieve the optimal density of the street-road network.

References

1. “On the new development strategy of Uzbekistan for 2022-2026”, No. PF-60 dated 28.01.2022
2. “Dislocation of streets under the jurisdiction of the specialized department for the use, maintenance and repair of the central streets of Tashkent, as well as the district improvement and district improvement departments”, Tashkent 2018.
3. Khotamov A.T., Usmanov Q.T., Kayumov A., Khudoyberdiev A. City streets, roads and transport. Study guide. UzR OO'MTV, Tashkent, TAKI, 2014. 160 pages.
4. Isamukhammedova D.U., Ismailov A.T., Khotamov A.T. Engineering improvement and transport. Textbook. “ALOQACHI” publishing house, Tashkent.: 2009. 230 p.
5. Khotamov A.T., Usmanov Q.T. Comprehensive landscaping of urban areas. Tashkent, TAQI. 2014 160 p.
6. https://go.mail.ru .

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