

## OVERVIEW OF TRENDS IN URBAN MOBILITY DEVELOPMENT<sup>1</sup>

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***Abstract:** Congestion, air pollution, CO<sub>2</sub>, safety and noise pollution are common problems in cities. In addition to the direct impact on traffic, transport also has an impact on social development, social exclusion and accessibility for people with reduced mobility. Many of these problems are expected to increase in the future as cities continue to grow and face additional demographic changes, such as an aging population. The need for sustainable transport is increasingly recognized and given due consideration. This study on the basis of a research reviews the trends in urban mobility and makes a comparative analysis of good international practices in the field of urban mobility together with the development of urban mobility in Bulgaria.*

***Keywords:** urban mobility development, trends, traffic*

***JEL Codes:** L10, L11*

### INTRODUCTION

Cities and their transport systems face a number of problems: urbanization and population aging; modern motorization; insufficient use of public urban transport; greenhouse gases, environmental pollution, noise; traffic load, congestion and low speed; lack of parking spots and places for short stopover of cars; a large number of traffic accidents. The 2011 White Paper "Roadmap to a Single European Transport Area – Towards a competitive resource-efficient transport system" defines several objectives that are directly linked to urban transport services: halving of cars using conventional fuels in public transport by 2030; the phasing out of cars by 2050; achieving virtually carbon-free urban logistics in large cities by 2030; approaching to zero the number of fatalities in road accidents by 2050.

The study of these problems reveals the potential for their solution. Although there are general provisions for all countries, there can be indicated very specific features for each individual country at the same time, which should be taken into account. It's necessary to take into account both national characteristics and European policies and practices in the construction of systems for sustainable urban mobility in Bulgaria (Pencheva, V., Asenov, A., Georgiev, I., Sładkowski, 2020).

### EXPOSURE

#### **Problems related to transport in cities**

The urbanization and aging of the population is typical for the whole Europe, but for Bulgaria this problem is especially serious. The population living in the cities of the country is 73%, including 70% of them that live in the 28 regional cities (Statistical Yearbook, 2020). Although in general for the country the share of people over 65 is higher and growing (Fig. 1), it is evident that for the cities it also remains high, as about 1/5 of the population is over this age. Modern urbanization and a higher standard of living are the reason for a significant increase in the number of cars in cities (Fig. 2).

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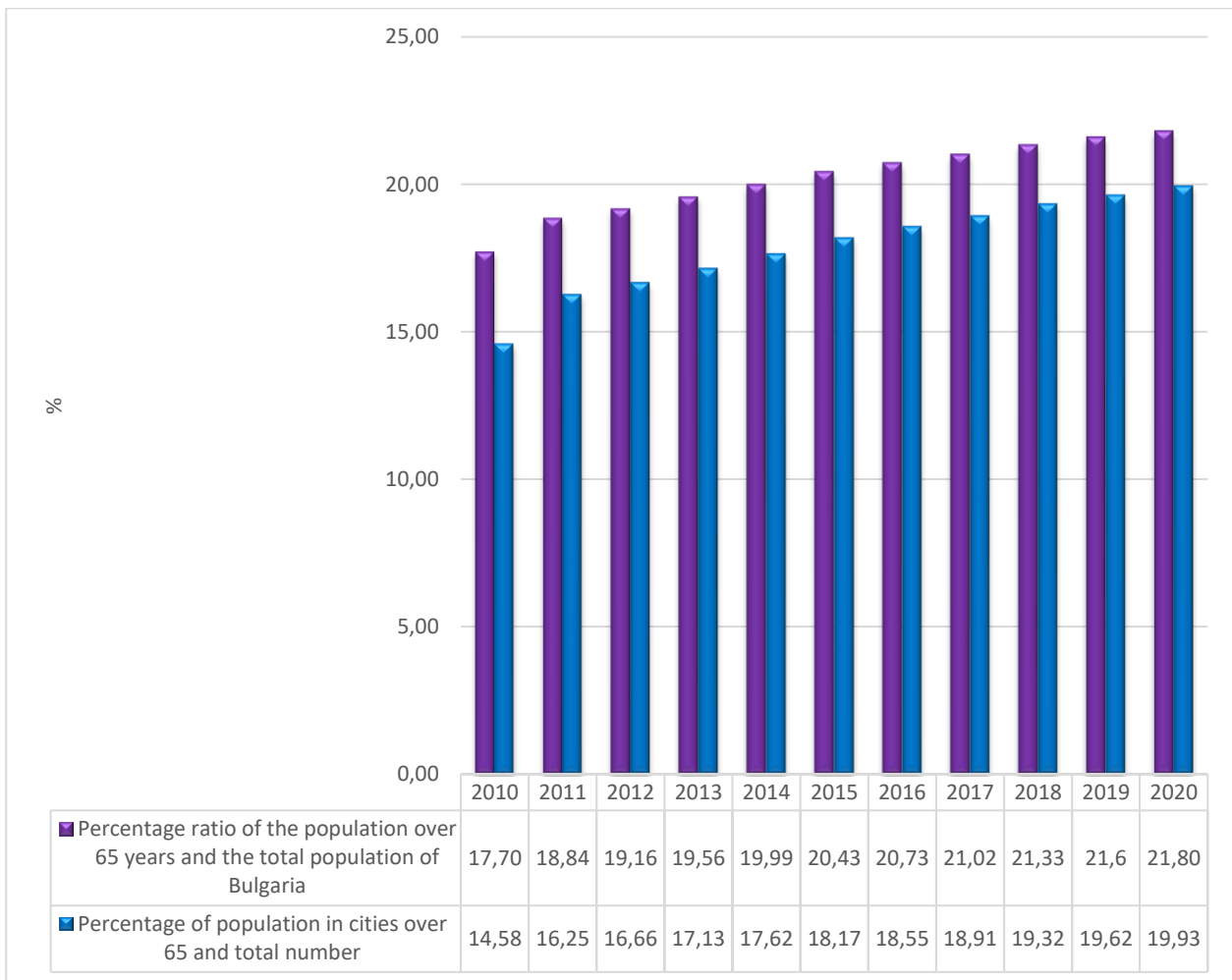


Fig. 1. Population in the country and cities over 65 years

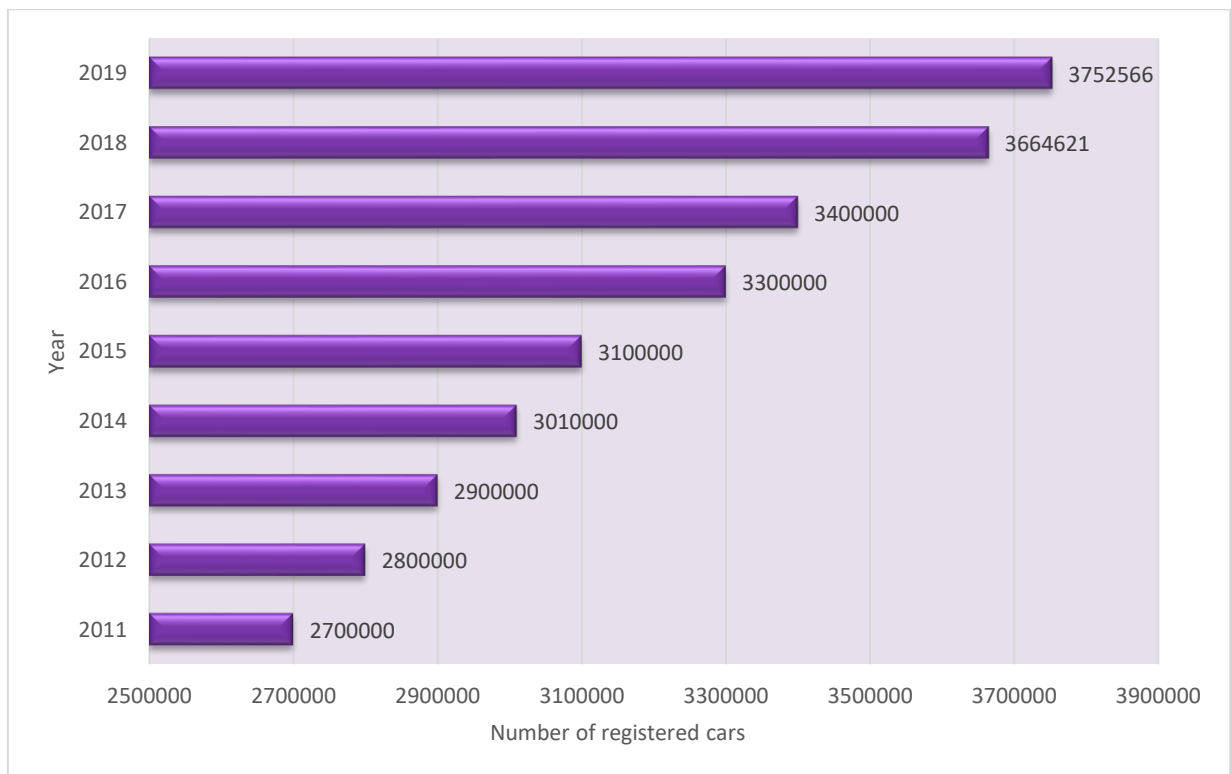


Fig. 2. Number of registered cars in Bulgaria

In 1985 there were 1,060,000 cars in the country. They are about 3.5 times more today.

The use of private cars at the expense of public transport is a common phenomenon. In Fig. 3. the number of transported passengers by mass public transport in the country is shown, which clearly shows the tendency towards their decrease. The predominant use in the country is of bus transport with 55% number of passengers, followed by 18% by tram, 15% by metro and 12% by trolleybus.

The levels of greenhouse gases, environmental pollution and noise in the cities are alarming. They are influenced by traffic load, congestion and low speed, congestion and low speed; lack of parking spots and places for short stopover of cars.

The percentage of road accidents in the cities is significant. Although there has been a downward trend in the number of deaths and injuries in road accidents in recent years, their number is significantly higher than the target for the decade 2011-2020. In 2020, 28,103 traffic accidents were registered in the country. 5,710 of them were serious road accidents (CAMs). In these road accidents 463 people were killed (at an estimated rate of 388) and 7,121 people were injured (at an estimated rate of 6,363), including 5,565 people with light injuries and 1,556 people with serious injuries.



Fig. 3. Number of transported passengers by mass urban passenger transport

### Urban transport systems and sustainable mobility

The state of the transport systems is important for dealing with the problems. The main components of the transport system are shown in Fig. 4.

The condition of urban transport systems is of paramount importance for the socio-economic development of settlements.

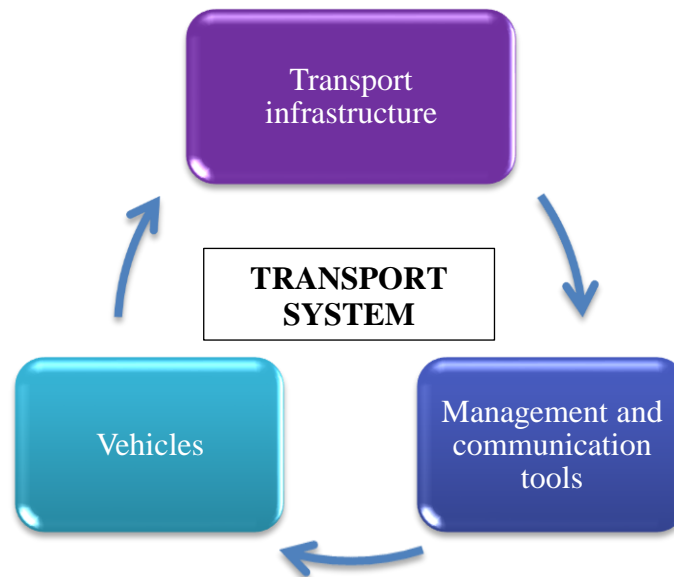


Fig. 4. Components of the transport system

The need for sustainable mobility (Jones, P., 2012; Geels, F.W., 2012; Williams, A., 2007) in cities is receiving increasing attention in its three dimensions:

- economic (efficiency and effectiveness of the systems);
- social (provided access to all groups of the population, vision zero for accidents);
- environmentally friendly (reducing the environmental footprint of transport to combat climate change and pollution).

We identify three potential pathways for the future of the urban transport system:

-technological way for greening of cars;

-changes in business models (Zott, C., Amit, R., Massa, L., 2011; Budde Christensen, T., Wells, P., Cipcigan, L., 2012) shared: carsharing (Ferrero, F., Perboli, G., Vesco, A., Musso, S., Pacifici, A., 2015), carpooling and integrated mobility, Mobility as a Service System-MAAS;

-active movement.

These three pathways (through engineering and technological solutions, shared and integrated mobility and active mobility) for the future of urban transport should not be considered separately. The servicing (expanding the range of services and offering complex solutions) of transport on shared and integrated mobility routes can create conditions for an efficient transport system of cities.

Furthermore, the concepts of sustainable mobility are not only a matter of reducing the number of vehicles or creating more environmentally friendly design solutions, but also of using them.

### **Sustainable urban mobility in Bulgaria**

In Bulgaria, transport schemes in urban areas are regulated by the Road Transport Act. Municipalities are responsible for policy and decision-making related to spatial and urban planning and development of the municipal territory. In the National Program for Reforms in Bulgaria 2011-2015, adopted in April 2011, the development and implementation of sustainable urban mobility plans (SUMP) is planned for 35 municipalities by the end of 2015, which has not been achieved. The development of the concept is a transition from the traditional planning of relocation of people in the cities, oriented mainly to the development of the infrastructure and planning of sustainable urban mobility oriented to the needs of different groups of people. The SUMP concept is still new in Bulgaria and is not required by law. The development and implementation of SUMP is a municipal task and relies on the responsibility of the municipalities (Pencheva, V., Asenov, A., Georgiev, I. 2020).

After 2014, SUMP are being developed and approved in the country, which are currently less than 20 SUMP in Bulgaria. The new moments of the international practices related to the change in the engineering, technological solutions (Pencheva, V., Georgiev, I., Asenov, A. 2021, Asenov, A.,

Pencheva, V., Georgiev, I. 2019) and business models related to mobility are not sufficiently taken into account in their development. In addition, with the exception of the city of Sofia, the plans do not include interaction with transport, providing logistics to cities. It should be noted the fact that there are dynamic changes in the urban transport mobility due to the development of technologies and business models on an international scale at the moment, which implies a permanent update of the developed SUMP.

## CONCLUSION

Today, cities and their transport systems face a number of problems: urbanization and population aging; modern motorization; insufficient use of public urban transport; greenhouse gases, environmental pollution, noise; traffic load, congestion and low speed; parking; a large number of traffic accidents. The condition of urban transport systems is of paramount importance for the socio-economic development of settlements. The need for sustainable urban mobility is receiving increasing attention and new solutions are being sought. One possible way is to develop sustainable urban mobility plans and implement them. The plans should take into account changes in the engineering, technological and business environment and update in line with the changes.

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