

### Title

**SUSTAINABLE URBAN MOBILITY PLAN BELGRADE**  
**План Одрживе Урбане Мобилности Београда**

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## LIST OF ABBREVIATIONS

<b>BAA</b>	Belgrade Administrative Area	<b>mil.</b>	million
<b>BAS</b>	Belgrade Bus Station	<b>OMTR</b>	Outer Main Tangent Road
<b>BG.voz</b>	Belgrade Urban Railway	<b>PE</b>	Public Enterprise
<b>bil.</b>	billion	<b>PC</b>	Passenger Car
<b>BUS PLUS</b>	Ticket selling system and vehicle management in PCT	<b>PCTS</b>	Public City Transport System
<b>CC</b>	Coefficient of Construction	<b>PDR</b>	Plan of Detailed Regulation
<b>CNG</b>	Compressed Natural Gas	<b>PPP</b>	Public-private Partnership
<b>CZ</b>	Central Zone	<b>PUC</b>	Public Utility Company
<b>DUP</b>	Detailed Urban Plan	<b>RGA</b>	Republic Geodetic Authority
<b>ELTIS</b>	European Local Transport Information Service	<b>RIT</b>	Railway Intermodal Transport
<b>EU</b>	European Union	<b>RTC</b>	Railway-transport Company
<b>EUR</b>	Euro	<b>SAQI</b>	Air Quality Index
<b>EMW</b>	European Mobility Week	<b>SBSP</b>	City of Belgrade Spatal Plan
<b>GDBA</b>	Gross Developed Building Area	<b>SEPA</b>	Serbian Environmental Protection Agency
<b>GRP</b>	General Regulation plan	<b>SMARTPLAN</b>	Transport Master plan of Belgrade
<b>GSP</b>	Urban Public Transport Enterprise "Belgrade"	<b>SP</b>	Spatial Plan
<b>GUP</b>	General Urban Plan	<b>SPRS</b>	Spatial Plan of Republic of Serbia
<b>ICRR</b>	Inner City Ring Road	<b>SRC</b>	Sports and Recreation Center
<b>IT</b>	Intermodal transport	<b>SUMP</b>	Sustainable Urban Mobility Plan
<b>ITS</b>	Intelligent Transport System	<b>SUTP</b>	Sustainable Urban Transport Plan
<b>LPG</b>	Liquefied Petroleum Gas	<b>TEU</b>	Twenty-foot Equivalent Unit
<b>MA</b>	Municipal Assembly	<b>UN</b>	United Nations
<b>MaaS</b>	Mobility as a Service	<b>WSU</b>	Wider Spatial Unit





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## FOREWORD

Sustainable modes of transport are a major requirement, both in a functional and in an ecological sense, for the City of Belgrade to operate. The nearly two million inhabitants of Belgrade view the city as an attractive place to live, and proof of this can be seen in the improve of the number of residents and rapid urbanisation taking place. In order for the city to maintain this status in the future, apart from ongoing urban development, the modal split of daily trips must be comprehensively improved and redefined. An efficient and accessible public transport, a reduction in the use of passenger cars, and an improve in the modal share of cycling and walking are the only ways to make Belgrade a healthier and better place to live in the years to come. Urban mobility planning has been the subject of intense political and urban planning debate in many cities around the world. The Sustainable Urban Mobility Plan (SUMP) of Belgrade creates the transport plan for the next 10 years and lays the foundation for the transformation of the transport system which will, in the coming decades, pose a challenge for planners and decision-makers alike. Different aspects of traffic planning and transport plans were analysed, and existing and future trends in the development of the transport system of the city were observed in an innovative and interdisciplinary way. The sustainable system of urban mobility will alter trends in urban planning since it requires more compact residential areas and facilities that are at walking or cycling distance. If not forced to cross large distances, we will be able to complete our daily commitments by walking or cycling, thus saving time, while walking or cycling, as physical activities, will yield benefits to our health. Streets with wide pavements and cycling lanes are more attractive for walking and cycling and benefit the city dweller's environment. On the other hand, a well-developed public transport system with dominant high-capacity subsystems, will provide a high level of service and contribute towards maintaining the public transport modal share at 50%, despite the growth of the inhabitants' purchasing power leading to a drastic improve in the number of registered passenger cars. The sustainable urban mobility plan sets ambitious goals for the City of Belgrade to develop a sustainable transport system for the future and provides measures and steps to be executed in the next 10 years in order for these goals to be achieved. This Plan is the product of intense cooperation of a wide cross section of the public, a comprehensive and continuous participation of residents, a large number of NGO, urban and municipal authorities, public enterprises, public utility companies, and other stakeholders which have recognised sustainable urban mobility as an important element in the further development of Belgrade.

Director of City Planning of the City of Belgrade  
**Marko Stojčić, M.Eng. Architecture**





## METHODOLOGY

# 1.





## INTRODUCTION

The Sustainable Urban Mobility Plan (SUMP) is an innovative way of planning the city's transport and urban system, which in a sustainable way primarily meets people's needs. The goals of such transport system planning are accessibility to the destination and services, improve of traffic safety, reduction of greenhouse effects and fossil fuels consumption, attractiveness of city events, life quality improve, healthier environment and reduced harmful impact on citizens' health. Sustainable mobility implies active involvement for changing the way of urban and traffic planning, trip modes, people's habits and behavior in order to reduce the negative consequences for society, ecology and economy, such as: air pollution resulting from climate change, noise, traffic congestion, traffic accidents, degradation of urban areas (reduction of pedestrian space due to improved construction and motorization rate), land exploitation, etc.

Sustainable urban mobility plan follows existing planning practices and legal frameworks of EU Member States and have the following characteristics:

- participatory approach,
- sustainability obligation,
- integral approach,
- clear vision, purpose and measurable goals,
- audit of costs and benefits, etc...

## THE GOAL OF SUMP

The plan of sustainable urban mobility needs to transform the transport system from a classic, primarily adapted to a passenger car, into a transport system adapted to sustainable forms of transport - walking, cycling, public transport and transport with environmentally friendly vehicles. In this way, it is possible to achieve a positive effect on the overall urban environment and make the city more pleasant for the life and stay of its citizens, visitors and tourists.

The goal of the Sustainable Urban Mobility Plan is to **create a sustainable transport system** in the city by:

- Ensuring accessibility for all,
- Safety improvement for all participants,
- Reduction of pollution, greenhouse gas emissions and energy spending,
- Efficiency and thrift improve in people and goods transport,
- Increasing attractiveness and quality of the urban environment, etc...

## METHODOLOGICAL AND PLANNING FRAMEWORK FOR SUMP

The Sustainable Urban Mobility Plan is an overall plan for the transport system development aimed at improving the trip conditions. Such plans refer not only to traffic, i.e. mobility, but also to all aspects that traffic connects or has an impact on: quality of life, social consequences, impact on the environment, accessibility to activities, costs, etc. The methodology for drafting the Sustainable Urban Mobility Plan for the City of Belgrade is defined by the guidelines of the European Union within the "Guidelines - Developing and Implementing a Sustainable Urban Mobility Plan". The Sustainable Urban Mobility Plan is based on the trends of European sustainable mobility, based on scientific and professional knowledge in the field of transport and transport technology, and generally applicable rules of the transport section.



*Planning process of Sustainable Urban Mobility Plan*

The development and implementation of the Sustainable Urban Mobility Plan according to the above methodology is a continuous process consisting of eleven main steps. A graphic overview of the process presents these steps in a logical sequence. The Sustainable Urban Mobility Plan has a planning basis in national strategies: Strategy for Sustainable Urban Development of the Republic of Serbia till 2030. ("Official Gazette of the Republic of Serbia", no. 47/19); Development Strategy of the City of Belgrade till 2021. ("Official Gazette of the City of Belgrade", no. 47/17) and The Development Strategy of Railway, Road, Water, Air and Intermodal Transport in Republic of Serbia from 2008. to 2015. ("Official Gazette of the Republic of Serbia", no. 4/08).

## COMMITMENT TO THE SUSTAINABLE MOBILITY PRINCIPLES

The Sustainable Urban Mobility Plan is a strategic plan that is designed to meet the needs of people's mobility in cities and areas in general, and to ensure a higher quality of life. It is based on existing planning practice and includes the principles of networking, participation and evaluation. At the United Nations Conference on housing and Sustainable Urban Development (Habitat III) from 17. to 20 October 2016 in Quito, with the participation of subnational and local authorities, parliamentarians, civil society, indigenous peoples and local communities, the private sector, professional, scientific and academic community, and other relevant actors, the New Urban Agenda, adopted by the United Nations General Assembly on 23 December 2016, was harmonized. The application of the principles of the New Urban Agenda in the development of the Sustainable Urban Mobility Plan gave guidelines to the planners to implement the range of knowledge, experiences, knowledge and data in the strategy development of the sustainable transport system of Belgrade.

## BENEFITS

Implementation of sustainable traffic policy of Belgrade, ie. The Sustainable Urban Mobility Plan will provide the following benefits:

**Integrated approach in traffic-spatial planning** - a long-term strategic vision of better mobility. Strengthened approach to efficient integrated planning by including sectoral policy, competent institutions and the entire urban agglomeration, thus achieving the established transport, urban, economic, social and environmental goals;

**Higher quality of residents' lives** - integrated traffic planning means planning for people, not for motor vehicles, through improved quality of public space usage, greater safety of vulnerable groups of traffic participants (children, the disabled, the elderly, etc.), less production of exhaust gases, pollution, noise, etc.;

**Positive effects on the environment and health** - activities to improve air quality, reducing noise and the impact on climate change, encouraging the population to use sustainable and healthy ways of moving (walking, using bicycles), which contributes to savings in external social costs, cleaner environment and better health of citizens, through: greater mobility and accessibility and a more attractive image of the city;

**Increasing the residents' participation through decisions supported by the wider community** - planning oriented to people - to the users of transport system, ie. of all social categories, strengthens the social inclusion of citizens so that it provides a high level of "public legitimacy";



**Capacity building in fulfilling city obligations** - SUMP is an efficient way of fulfilling obligations from EU regulations at the national level, related to air quality and noise, mobility, road safety, spatial, energy and environmental efficiency, etc.;

**Better access to funds (EU and other development funds)** - the adoption and implementation of SUMP provides preconditions for access to EU financial resources, ie. possibility of application to the competitions for innovative traffic, environmental and energy solutions, which will improve the competitiveness and capacity of available financial resources of the city of Belgrade.

## KEY PARTICIPANTS AND INTERESTED PARTIES

In the first phase of work on the development of the Sustainable Urban Mobility Plan, through meetings of the working team, public debates, panel discussions and forums, various entities that have or influence issues related to mobility in Belgrade were identified. By identifying and analyzing potential impacts, interested parties are classified in relation to the impact / interest they may have in the development of the Sustainable Urban Mobility Plan.

### Identification of stakeholders

	Weak impact	Strong impact
	<b>Coordination and data exchange and procedure</b>	<b>To involve and to be involved</b>
<b>Higher interest</b>	<ul style="list-style-type: none"> <li>- Balkan Council for Sustainable Development and Education</li> <li>- Road Traffic Safety Agency</li> <li>- Secretariat for Social Welfare</li> <li>- Secretariat for Environmental Protection</li> <li>- Accessibility Audit associations</li> <li>- Associations of persons with physical and sensory disabilities on the territory of Belgrade (there are 7 of them)</li> <li>- NGO sector - cycling and pedestrian associations</li> </ul>	<ul style="list-style-type: none"> <li>- Secretariat for Transport</li> <li>- Secretariat for Public Transport</li> <li>- Secretariat for Urban Planning and Construction</li> <li>- Secretariat for Investments</li> <li>- Belgrade Land Development Public Agency</li> <li>- City municipalities</li> <li>- Parking service</li> <li>- Roads of Belgrade</li> <li>- Belgrade Metro and Train</li> </ul>
	<b>To get involved and to inform</b>	<b>Useful for support in decision formulation</b>
<b>Lower interest</b>	<ul style="list-style-type: none"> <li>- Ministries (transport, urbanism, environment, regional development)</li> <li>- Airport "Nikola Tesla"</li> <li>- Port of Belgrade</li> <li>- Integral railway transport</li> </ul>	<ul style="list-style-type: none"> <li>- City transport company</li> <li>- Association of private carriers</li> <li>- Roads of Serbia</li> <li>- Serbian Railways</li> <li>- Directorate for Waterways - Plov Put</li> <li>- Urbanism Institute</li> <li>- Taxi associations</li> <li>- CarGo</li> <li>- City Sanitation</li> <li>- Greenery Belgrade</li> </ul>

## SUMP MAKING PROCESS

The work on the development of the Sustainable Urban Mobility Plan, according to its basic methodology, requires a multidisciplinary team to deal with it. The team of processors is composed of various professions experts that deal with the problems of the city life organizing. The working team consists of spatial planners, urban planners, architects, traffic engineers, planners and designers, biologists and environmental experts. By academic titles, there are doctors of science and professors, as well as graduate engineers with extensive experience in city planning. The working group formed by the Mayor was formed from the representatives of the Secretariat of Transport, the Secretariat of Urbanism and Communal Housing, the Secretariat of Environmental Protection, the Secretariat of Public Transport, the Ministry of Construction and Infrastructure, the Urban Institute of Belgrade, the Directorate for Construction Land and Belgrade Construction, and the Standing Conference of cities and municipalities. The chief urban planner is the president of the working group for monitoring the SUMP development. The development of the Sustainable Mobility Plan is focused on the scope of the General Urban Plan of Belgrade, which covers a part of the administrative area of Belgrade within the scope of 10 central city municipalities. Institutions within the working group, in accordance with the geographical framework of the plan, have responsibilities in the areas of their competence. While the city institutions are responsible for the overall coverage of the plan, the institutions within the ten central municipalities are in charge of the spatial coverage of their respective municipalities. During the work on this task, the processor permanently cooperated with the representatives of the interested parties, which, in addition to city institutions and groups of citizens, associations, non-governmental organizations, but also persons who want to contribute to the plan.



*Organizational structure of the SUMP development process*



At each stage, conclusions and results were made available to other identified participants, i.e. interested parts, in order to ensure transparency of the planning process and active participation of all interested parts. According to the terms of reference (TOR), SUMP is conducted transparently with the participation of the professional public and the citizens of Belgrade. All implemented activities are promoted on the website and Facebook page of SUMP. In this way, all the results of the work on the project are available at all times to the public, who is invited to actively participate in the development of the plan with their proposals and ideas.



In the process of SUMP making, 18 public events were organized, i.e. events where academic community, interested parties and citizens were able to directly participate in the planning process. Public events included series of direct meetings at workshops, forums, panel discussions, public consultations, street events and competition works exhibitions. Apart from direct meetings during the SUMP development, three opinion polls were conducted on the following topics: mobility, visions and goals of sustainable mobility planning and the measures selection to achieve the SUMP goals. During the SUMP development, an open competition by the name "SUMP Vision" was announced, the works were exhibited and the competition participants were awarded. The street event was organized during the European Mobility Week, on September 22 - Car-free day.





**REVIEW**

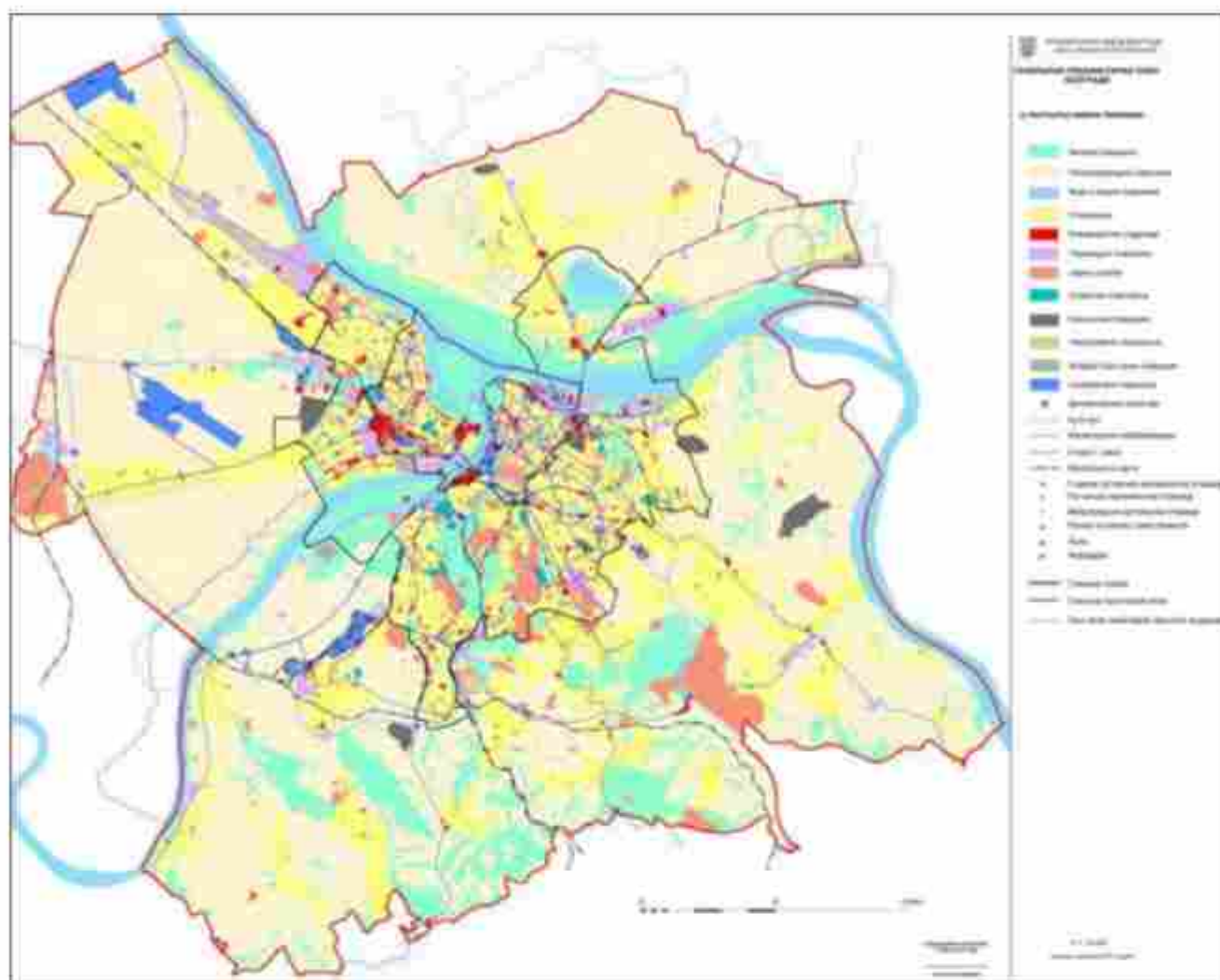
**2.**



## SPATIAL COVERAGE AND PURPOSE OF THE AREAS

The area of the city territory that is the subject of the Sustainable Urban Mobility Plan - SUMP is about 77.851 ha and coincides with the border of the General Urbanism Plan of Belgrade ("Official Gazette of the City of Belgrade" No. 11/16) which recognized city zones, characteristic urban units and defined the existing purpose area. The GUP area is divided into three spatial zones: I central zone, II middle zone, III peripheral zone. Within these three spatial zones, there are 20 spatial - functional urban units. **The central zone** (3.236 ha) consists of the urban core of old Belgrade, New Belgrade and Zemun. It has a dominant urban and public urban character with a compact urban part that is characterized by multi-layered purposes and functions. **The middle zone** (11.538 ha) includes continuously built part of the city with a less compact structure and a greater representation of free and green areas. The middle zone is characterized by organized residential complexes, and the city functions are grouped along the main roads. **The peripheral zone** of the city (63.077 ha) occupies the largest share of the area with parts that are outside the boundaries of the construction area. The built-up areas are dominated by housing construction with an often unsatisfactory level of traffic and communal infrastructure and poor coverage of public city functions. Housing is represented as collective in open blocks, family housing of urban character and in peripheral parts family housing along agricultural areas. Within **the spatial scope of SUMP**, according to the current situation, approximately 26,4% (20.522 ha) of the area is intended for city functions - housing, public services, commercial facilities, traffic and other infrastructure and economic areas. The remaining 73,6% (57.329 ha) of land goes to green areas, water and water land, forests and agricultural land. The economic activities of the zone intended for primary and secondary activities, industry and individual economic and production plants occupy an area of 4.903 ha of the general plan territory.





*General urban plan of Belgrade, 2016. – Existing area purpose*



## SOCIO-ECONOMIC CHARACTERISTICS

According to the 2011. census, there were 1.659.440 inhabitants in 606.433 households in the area of Belgrade (17 municipalities). In the same area, the number of working places is over half a million. There is a negative trend of change in household size in the previous period from 3,11 in 1991. to 2,78 according to the 2002. census, and to 2,74 according to data from 2011. - of which about 71% of households consist of 2-4 people. The general distribution of the population by age is: almost 48,86% in the economically active age, 20,96% in the school age (including schools and colleges) and 24,36% of pensioners (over 60 years of age).

### *Population prognosis (2016-2033)*

	2011	2016	2021	2027	2033
Central zone	197.013	198.707	204.121	212.810	225.200
<b>GUP zone</b>	<b>1.339.865</b>	<b>1.387.304</b>	<b>1.414.443</b>	<b>1.480.784</b>	<b>1.555.416</b>
Zone of administrative Belgrade area	320.575	327.924	336.518	346.273	357.160
Belgrade area	1.659.440	1.695.228	1.750.981	1.827.057	1.912.576

## TRANSPORT INFRASTRUCTURE

Transport and traffic infrastructure in the city of Belgrade is a very present problem due to its insufficient development, construction and capacity, and at the same time represents the potential for future development, i.e. one of the most influential factors for achieving the general goal, arrangement and development of Belgrade. The basic characteristics of the existing traffic infrastructure in the area of the Belgrade metropol are:

- Roads of international importance are only partially built with elements of the highway, and the existing built sections are mostly of unsatisfactory road condition, the problem is especially the lack of a complete bypass;
- The network equipping of international roads with operational and accompanying contents (traffic and tourist signalization, motels, services, pumps, help service, information, etc.) is at the lowest organizational and technical-technological level;
- The regional road network is also insufficiently developed and the existing one is insufficiently maintained;
- Railways are mostly single-track with outdated technical elements, signaling and safety equipment, low throughput and low speeds;
- Due to insufficient transport capacity, unregulated and unbuilt stops, unmaintained railways and irregular traffic, urban-suburban railway traffic has a very small participation in the total passenger transport, especially the lack of high-capacity subway deficiency, metro type;
- Intercity and suburban traffic relies only on bus transport whose efficiency is directly dependent on the condition of road infrastructure and traffic load;

- Insufficiently developed systems that ensure accessibility to traffic infrastructure and use of vehicles for people with disabilities and people with special needs;
- The benefits of the Nikola Tesla Airport in terms of geographical position are insufficiently used, the facilities and capacities of the airport meet the needs of today's international air traffic, but there is a lack of adequate facilities and capacities for landing cargo aircraft;
- Nikola Tesla Airport has one runway 3,4 km long, and thanks to the use of equipment and procedures for SAT IIIB, it functions even in conditions of reduced visibility. It has 2 terminals and 16 parking positions for boarding or disembarking passengers from the plane;
- Port capacities do not have a defined status or vision of future development and the existing ones are not fully, or not at all equipped for modern container and modern international multimodal transport;
- Appropriate work coordination between the port of "Belgrade" and the port in the metropolitan area (Pančevo, Smederevo) has not been established;
- River traffic is reduced only to seasonal and tourist traffic, primarily of an international character;
- The network of logistics centers is underdeveloped, integrated transport terminals are in unfavorable locations and insufficiently technologically equipped, and it is not yet possible to talk about Belgrade as a multimodal node;
- Belgrade street network is very branched but with a low level of service. According to the balance of areas given in the GUP of Belgrade ("Official Gazette of the City of Belgrade", No. 11/16), the involvement of traffic areas in the total area is 1,4%, or 1.061 ha;
- The highway passes through the city center itself, and today it is the mainstay of the road network to which the main road network connects;
- With the construction of the "Ada Bridge" and the "Pupin Bridge", a connection was established between these two bridges over the streets Heroja sa Košara, Nikole Dobrovića, Marka Čelebonovića and the T6 Road - which stretches from the "Ada Bridge" to the T6 road parallel to the highway;

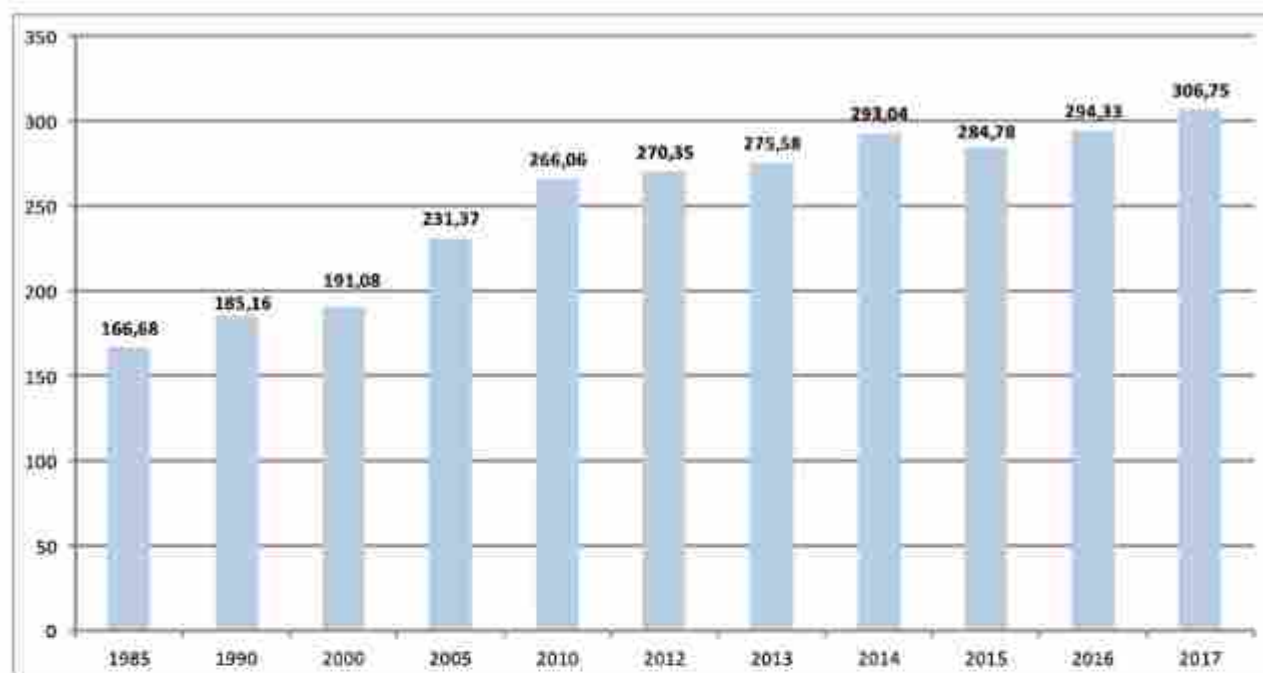
The main transverse connections that connect to the highway at the central part of the city are also the carriers of the main city branches development that have no alternative.

## TRANSPORT MODEL

The Transport Model of Belgrade has been formed through several phases: in 2003, 2005, 2007 and 2015. The current model was calibrated based on traffic surveys conducted in 2015, i.e. traffic and passenger counting on the street network and in public transport. The basic transport model was formed within the Traffic Master Plan (Smart Plan) and is based on data from traffic research and other data sources. The base year model is not transport requirements four-stage model based on which to predict the future impacts of key problems, including changing the areas purpose and redirecting requirements to other modes of transport, such as subway. The transport model encodes a complete network with the intersections geometry, as well as the operation mode of all light signals in Belgrade. The public transport system is defined for each line and contains all stops and terminuses. The timetable of all line directions is included in the transport model.

## MOTORIZATION RATE

In the area of Belgrade, there is a constant improve in the number of registered vehicles. In 2017 in the city of Belgrade, the motorization rate amounted to 306,75 vehicles per 1.000 inhabitants, while in 2018 it was 318,86 vehicles per 1.000 inhabitants, which is even about 60% more than in 2000. This trend of motorization is both a threat and a challenge to the system of public urban passenger transport in Belgrade.



*Changing the motorization rate in the city of Belgrade*

## PARKING

The motorization rate is constantly increasing in all countries of the world, which has led to a state of higher traffic requirements compared to roads capacity. The city center without arranged **parking** is a feature of today's Belgrade. The inherited situation was exacerbated by the steady improve in mobility and the motorization rate, as well as the stagnation of service level in the public transport passenger sector. Vehicle parking needs far exceed available capacities. In the central zone, the distribution of parked vehicles depending on the parking space shows that only 8% of vehicles are parked in garages, 2% in organized open parking lots, and 90% on street fronts.



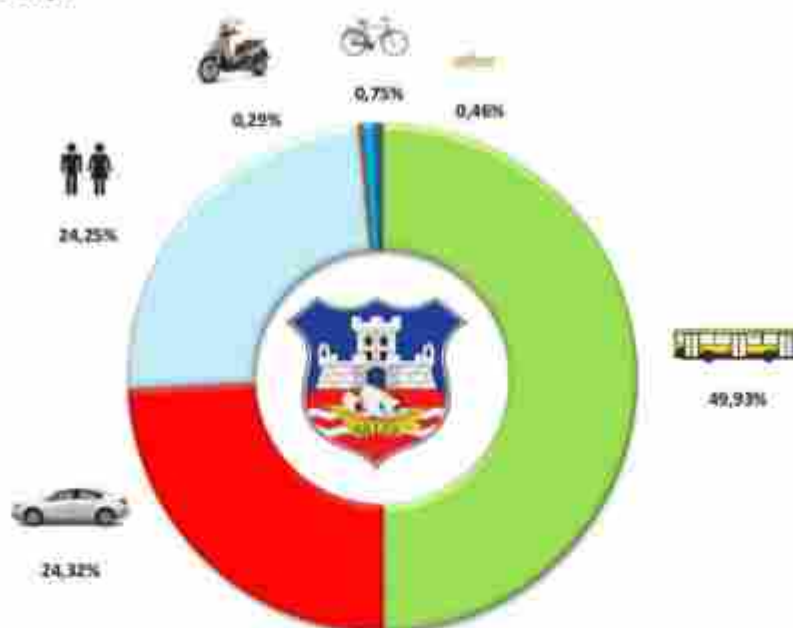
Lack of parking capacity is the cause of the so-called "irregular parking" which is manifested by parking vehicles on sidewalks and pedestrian areas, the road of the secondary street network and even on green areas. There is no data on the number of regular parking spaces that are not in the parking charge system (parking spaces on street fronts, public parking lots, etc.). Parking of passenger vehicles in Belgrade is organized through **the zone parking system** at individual parking spaces, in parking garages and in off-street parking lots. Parking spaces on the street fronts, the narrower and wider center of Belgrade are grouped by zones with a time limit, while in parts of the city which generate fewer vehicle parking requirements, a category of general parking outside the zoned area is introduced. There are **25.000** parking spaces available to users in the zone parking system. The time limit for control and payment of parking is applied on weekdays from 07:00 to 21:00 and on Saturdays from 07:00 to 14:00. There are a total of **13 public garages** in Belgrade, of which the "Parking Service" manages 8, with a capacity of about 2.800 parking spaces. In the narrower and wider city center, users have at their disposal 15 parking lots with a capacity of about 4.250 parking spaces. Public parking lots, which are in the system of control and payment of parking, have specially marked places for **parking vehicles of the people with disabilities**. In such parkings, users with disability stickers can use the parking service free of charge and without restriction. In the zoned part of the city, about 540 general and about 75 special parking spaces have been marked for vehicles of persons with disabilities. The **"Park and Ride"** system has been established in the general parking lot outside the zoned area near the new terminus in the Vladimira Popovića Street. The capacity of this parking lot is 292 parking spaces. The **"Park and cycle"** campaign enables drivers – users of the parking service, to pick up a bicycle with an ID card for the price of vehicle parking. This service is provided at the following parking facilities: garage "Obiličev venac" and parking lots "Ada Ciganlija", "Milan Gale Muškatirović" and "Sava Centar". The plan of general regulation of the public garages network in Belgrade ("Official Gazette of the City of Belgrade", No. 19/11) locations for about 60 public garages are defined, with a total capacity of about 19.000 parking spaces, in the central zone of Belgrade, Banovo brdo, New Belgrade, Banjica and Zemun.

## INNER-CITY TRIPS

Research on Belgrade transport system characteristics is performed every 10 years in average. The average number of traveling on working day per person is 1,94 (in 2015), which is a reduced value of the mobility coefficient compared to 2005, when it was 2,18 trips per resident per day. The main characteristic of the Belgrade transport system is the high involvement of public transport in the realization of daily trips (about 50% with a slight decline). Passenger car and walking equally participate with about 24% while the share of bicycles is below 1% mainly for recreational purposes. In the traffic image of the city, the morning and afternoon peak hours (8 am and 4 pm) are clearly distinguished, with congestion passing into the following hours, which are evident on the network. About 64,5% of trips are shorter than 30 minutes, 15,8% are shorter than 10 minutes and 9,5% last longer than one hour. Travel times in public transport are the longest, and are 50% longer than those performed by passenger car. At the same time, travelling performed by some of the modes of public transport last longer than 50 minutes. Driving a car takes about 26 minutes on average, with over 50% done in less time than average. Over 70% of travel is done by motorized modes of transport, both throughout the day and in the morning rush hour. The bicycle is primarily used as a means of recreation. This



mode of transport taking part is very low (below 1%) and mainly related to recreational purposes. Belgrade's strategic commitment is to preserve such a high level of use of public transport. The involvement of rail systems (trams, BG: train and Beovoz as modes of public transport) in passenger transport is small and covers about 3% of the total number of travels in the area of Belgrade. After public transport, passenger car driving is, along with walking; the second most important mode of transport where each of them participates with about 24% of the total trips in the city.



*Modal share (Source: Belgrade Transport model, 2015.)*

## FREIGHT VEHICLES

In the previous period, significant problems were created in Belgrade when lorries were passing through the city. This referred to the routes that connected the Pančevo Bridge with the highway (Corridor X) around Kalemegdan and across Savska Street, as well as over Dimitrija Tucovića Street, King Alexander Boulevard and Vojislav Ilčić Boulevard. The mixing of local traffic with the flows of transit and origin-destination traffic in the existing state is reduced to passenger car traffic because the problem of mixing with freight traffic has been solved by lorries driving restriction for heavy good vehicles. The characteristics of freight traffic flows are as follows: 306.531 vehicles passed through the inner cordon (in total in both directions); Out of about 158,5 thousand vehicles entering the central city zone, about 2% are lorries (light: 1,34%, heavy: 0,45% and auto transporters: 0,19%); In addition, the percentage of vans that make up about 4% of the incoming traffic should be taken into account; In total, for both directions, vans make up 3,65% of traffic, and lorries 1,93%

of traffic. The research determined the intensity of traffic flows of lorries that gravitate to and from the wider central zone of Belgrade, as well as the volume of transit traffic, and 176.370 vehicles were recorded. Of that number, about 81,5% are passenger cars, and about 14,5% are lorries and vans. In transit through Belgrade, about 17% of cargo trips and about 7% of passenger vehicle trips are realized.

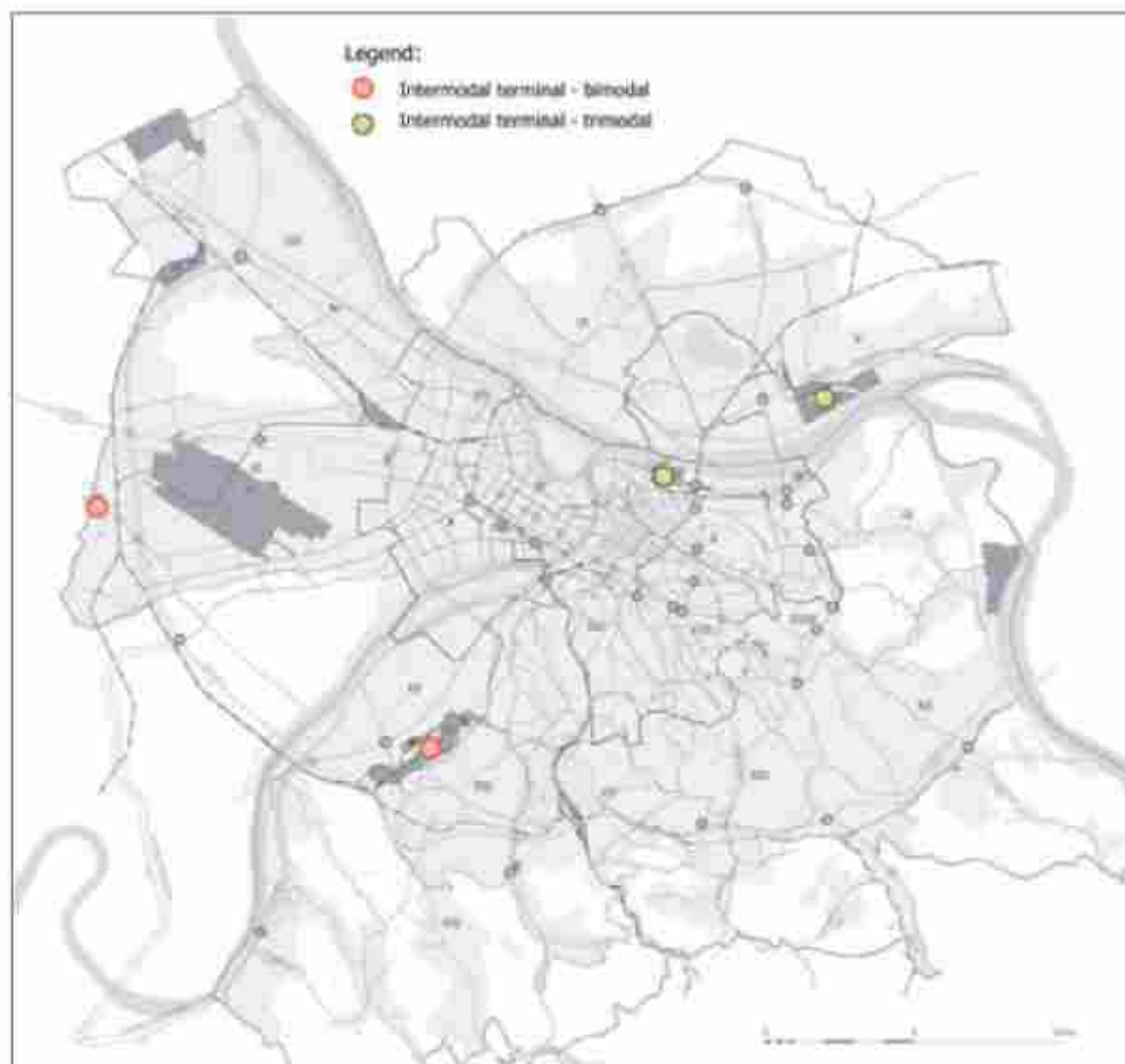


*Lorries flow restriction through Belgrade*

## NETWORK AND INTEGRATED TRANSPORT CENTERS

On Belgrade territory, three intermodal terminals are active in the current state, as follows: 1. RIT - railway intermodal transport, average capacity utilization is about 50-60% of the total capacity of 62.000 TEU/year (bimodal terminal; road transport - Corridor X, railway traffic - Corridor X, in the immediate vicinity of the Danube River); 2. Nelt - private railway logistics terminal in Dobanovci (in operation since 2017) and 3. Port of Belgrade, an average of 30% utilization of the total capacity of 12.000 TEU/year (trimodal terminal; road traffic - Corridor X, railway traffic - Corridor X, river traffic- The Danube river). Intermodal centers that also affect the transport of goods on the territory of Belgrade are the intermodal terminal Leget in Sremska Mitrovica and the Danube Port (trimodal terminal; road traffic - Route 4, railway traffic - Route 4, river - The Danube River) in Pančevo. The construction of a new intermodal terminal on the territory of Belgrade with the center in Batajnica

is planned. The capacity of the intermodal terminal will be 80.000 TEU/year, with a long-term target capacity of 240.000 TEU/year. This terminal will have a direct connection with Corridor X, ie. it will be connected to the railway station in Batajnica, via the service road for the road interchange Batajnica.



*Intermodal terminal distribution at the city of Belgrade territory*

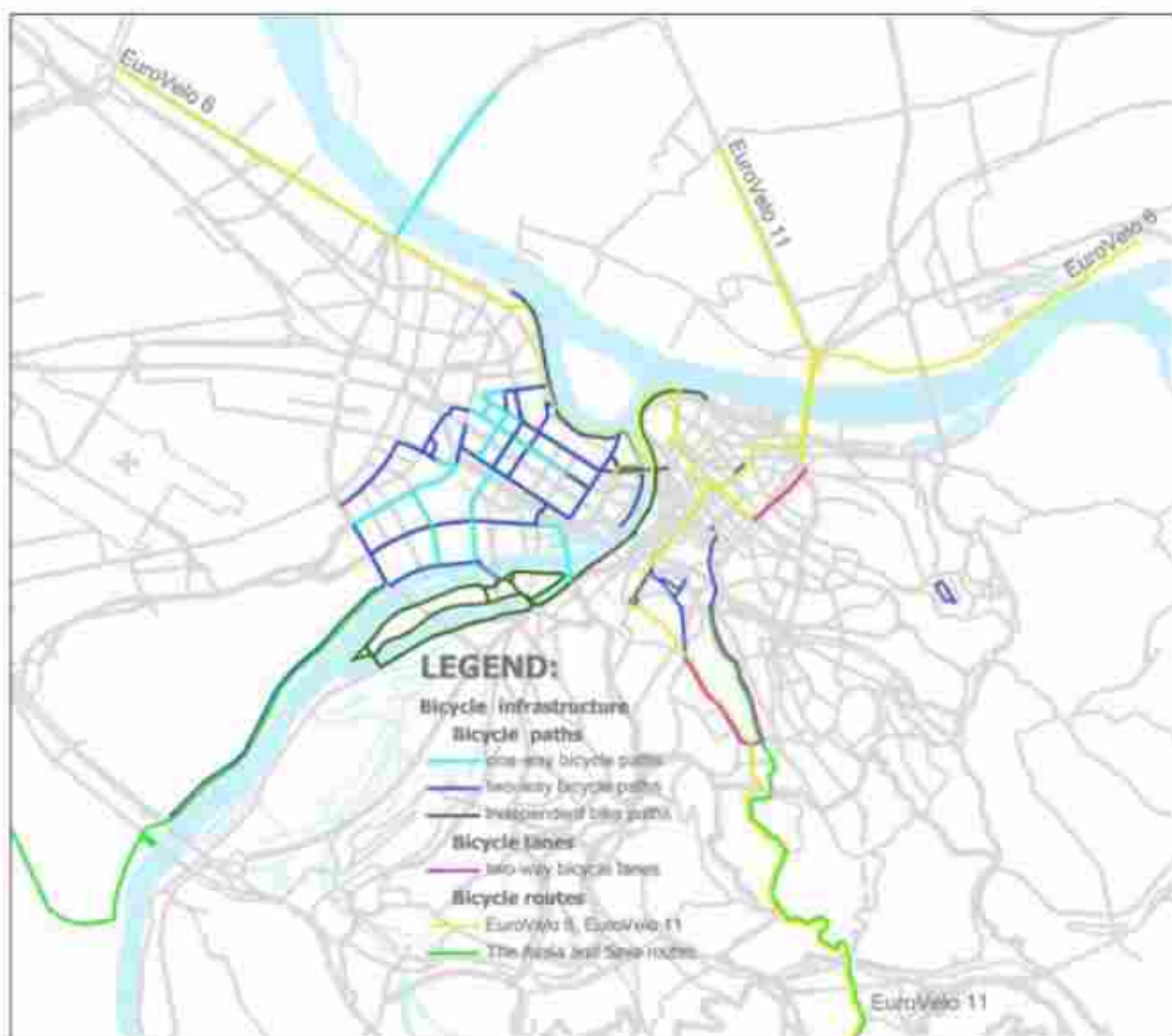


## NON-MOTORIZED TRIPS

Improving pedestrian and bicycle traffic and increasing the share of non-motorized trips in the modal split is one of the basic tasks and goals of the development of sustainable urban mobility plan. According to the available data, non-motorized trips on the city of Belgrade territory (GUP area) take a share of about 25% of the total trips by all modes of transport.

**The bicycle** as a means of transport has a history of two centuries, but technical and technological progress and the development of the automotive industry, has made its use marginalized and reduced to recreation and leisure. The significant advantages that the bicycle has in relation to motorized transport possibilities, as well as walking, have been unjustifiably neglected in the past period. Although the share of bicycle traffic in the modal split in the area of GUP Belgrade is modest and amounts to less than 1% in the total distribution of trips, it can be said that there is potential for its use in everyday trips. Two thirds of travel in Belgrade has an average length of less than 30 minutes, and almost 16% of travel is less than 10 minutes. The terrain topography is suitable for the expansion of bicycle traffic on the territory of New Belgrade and Zemun. The city center has less favorable characteristics in this regard, but still within acceptable limits for mastering the terrain configuration. Climatic conditions in the city are characterized by a moderate continental climate, with not too harsh winters and relatively short periods of low and high temperatures. The average annual temperature ranges between 12,3 and 14,2 degrees Celsius. An important climatic characteristic of Belgrade is the presence of the southeast wind - Košava, especially felt in autumn and winter, whose strong gusts can be an aggravating factor in the use of bicycles. The geographical position and climatic conditions enable the uninterrupted use of the bicycle in the period of 8-9 months a year, and it can also be used in the winter, depending on the amount of precipitation. Also, the ten-minute isochron gives an advantage to bicycle traffic, having in mind trip characteristics and the average travel length in Belgrade. Constructed and arranged bicycle paths are located mainly in New Belgrade and along the banks of the Sava and the Danube rivers: bicycle path from Marina Dorćol to Ada Ciganlija (7,5 km); bicycle path from Ada Ciganlija - around the lake (about 8 km) and bicycle path and lanes, about 50 km long, through the blocks in New Belgrade. Recently, bicycle lanes have been built in the old part of the city, in the Bulevar Oslobođenja on Slavija Square, The Ruzveltova Street, etc. Two **bicycle routes** on the territory of the city have also been defined: the Avala and the Sava routes with accompanying elements. Two "EuroVelo" corridors also run through Belgrade, as parts of the European bicycle network - Corridor EuroVelo 6 (Atlantic Ocean - Black Sea) and Corridor EuroVelo 11 (Eastern Europe). The existing network of cycling infrastructure, which includes paths, lanes and bicycle routes, has a total length of about **202 km** (of which 99 km are bicycle routes). The idea of introducing a system of **public bicycles** in Belgrade has existed for many years, and it appears through various forms of planning and project documentation. The existing capacities of the bicycle parking elements are: at 50 locations "П" profiles with a total capacity of 243 parking positions and "racks" at 54 locations with a total capacity of 61 parking spaces. The current legislation and traffic regulations for the territory of the Republic of Serbia did not sufficiently included the cycling infrastructure and its elements. Due to the lack of necessary data for cycling infrastructure design, the experiences of other countries, primarily the European ones, have been used most often so far, and as a result there are differences in the choice of design elements, and thus inconsistencies in applied network solutions.





*Existing network of bicycle paths, lanes and routes in the city of Belgrade GUP area*



*Bicycle-pedestrian elevator on the Branko's Bridge*

Pedestrian trips are the most common type of transport precisely due to the fact that EVERY trip begins and ends with walking. According to the available data for the area defined by the GUP of Belgrade, walking is represented by 24,4% in modal split. In the following period, the share of pedestrian trips is expected to decrease due to improved motorization rate and the use of passenger cars. In Belgrade, the percentage of trips whose average length is less than 10 minutes is 15,8%, while trips lasting up to 30 minutes are represented by as much as 64,5%. Pedestrian traffic is very intense in the old part of the city, in the center of Belgrade, in the center of Zemun, along the banks of the Sava and the Danube, on Ada Ciganlija and other tourist and recreational locations in Belgrade (e.g. the Avala, Zvezdara Forest Park, Košutnjak, etc.), as well as in the central parts of the suburban municipalities. In the current planning documents, pedestrian traffic is treated at a very low detail level, which definitely cannot meet the requirements of sustainable urban planning. Within Belgrade General Regulation Plan, pedestrian areas (paths and sidewalks) are defined as: "an integral element of all city roads cross profile. They must be physically separated into special areas, protected from other modes of motor traffic, except for integrated streets." It is planned to continue the development and expansion of pedestrian zones in the centre of Belgrade and Zemun as they now exists, namely: expansion of pedestrian zones in the center of Belgrade towards the Sava, Kalemegdan and direct connection with Belgrade on the water after its construction. The expansion should be implemented in 4 phases, and after the plan is fully implemented, the central city center will be closed to traffic and bordered by the streets Zeleni venac, Brankova, Braće Jugovića, Tadeuša Košćuška and Pariska.



*Belgrade pedestrian zone: Skadarlija*



*Zemun pedestrian zone: Magistratski trg*



*Pedestrian zones in Belgrade and Zemun: Streets Knez Mihajlova and Magistratski trg*





*City centre pedestrian zone – Knez Mihajlova street*

Analyzes indicate a **lack of pedestrian infrastructure** that would connect the old with the new part of Belgrade, i.e. a lack of pedestrian bridges over the rivers. The only bridges that pedestrians can use are the Branko's Bridge and the Ada Bridge. In the context of expanding connections and accessibility of bicycle and pedestrian traffic, it is planned to convert the old railway bridge (south of the unused Gazela Bridge) into a pedestrian / bicycle bridge, which would provide the first crossing over the Sava intended exclusively for non-motorized trips. Till the end of 2021, the construction of a pedestrian bridge is also planned, in the extension of the Omladinskih brigada Street, between Blocks 70 and 70a, where New Belgrade and Ada Ciganlija will be connected. In the current situation, very large differences have been noticed in the urban spaces arrangement of the city territory. By moving away from the central city center to the periphery, and also from the built-up areas in the wider center, one can notice a completely **different visual identity** of public spaces, which certainly includes pedestrian directions. Often these areas have more attributes of rural than urban area, both from the aspect of traffic arrangement, and from the aspect of urban planning in general. Infrastructure intended for non-motorized users is often usurped by parked vehicles, inadequately positioned elements of communal infrastructure and poor solutions of ground floor arrangement (barriers and leveling in the horizontal plane), which impairs its function, endangers pedestrian safety and degrades the aesthetics of space. One of the basic characteristics of pedestrian areas in Belgrade is the diversity of width, horizontal and vertical signalization, and street furniture, but also the lack of sidewalks on a large number of roads. Traffic accidents with pedestrians, at the level of the city of Belgrade, are 30,8% of the total number of accidents with pedestrians at the Republic of Serbia level. The number of accidents with pedestrians indicates frequent problems that are widespread on the network of roads and streets. Pedestrians and cyclists need to be provided with adequate infrastructure in order to reduce the negative impact on the safety of non-motorized road users, at least from the road aspect and factors.





*Existing and possible bridge conversion*



*Inadequately arranged and maintained pedestrian infrastructure*



*City centre and suburban area*

## ACCESSIBILITY

**Mobility, which is reflected in the realization of trip opportunities, is one of the basic life needs of every individual.** People with reduced mobility and functional disabilities represent a part of the population to which, when planning and shaping the environment, special attention should be paid. Their inclusion in everyday life primarily depends on the built environment, which can be an obstacle for them. Because of such obstacles, these people are often deprived of their basic life rights, because they face impregnable and hardly surmountable difficulties practically everywhere. About 95.000 people with some form of disability live on the territory of Belgrade. Also, the elderly is represented in the total population of the city with about 18%, with a significant growth trend as a result of demographic aging of the country's entire population. When other vulnerable categories with occasionally reduced mobility are added to this number, it is clear that this is a population the size of a smaller city, which must be given the opportunity to participate equally in traffic.

*Persons with disabilities who do not live in institutions, aged 15 and over, Census 2011*

Type of problem						TOTAL
Eyesight	Hearing	walk/climbing	Memory/Concentration	Independence	Communication	
37.416	23.029	57.430	13.878	13.602	8.208	94.920

People with reduced mobility and functional disabilities have different needs in relation to the environment and traffic. It is a very heterogeneous type of user, primarily in terms of character and restriction causes, but also by age, gender, level of education, etc. whereas it should be borne in mind that a large number of them have more than one handicap. Difficulties that occur in trip are primarily a consequence of: inadequate accessibility,

insufficient space, complex environment, contradictory solutions, etc. People who have difficulty moving on the way to their goals often have problems due to poor environment accessibility. Whether it's because of stairs without sloping ramps or too steep a sloping ramp, or because of too narrow or slippery a surface. Poor accessibility is a problem of both the internal and external environment. Insufficient space such as: narrow pedestrian areas, parking spaces that are adapted for the disabled but do not have the appropriate dimensions, bus stops, overcoming height differences, etc., can be a problem in traffic surrounding.



*Examples of poor environment adaptation to the people with reduced mobility*

During environment arranging, it should be borne in mind that one solution that is seemingly the most favorable for one group of people with disabilities may be a source of problems for another group. One such example is the lowering of curbs at pedestrian crossings. Although such a solution is suitable for people in wheelchairs, it can be confusing for blind people who feel their path with a stick, so they may not recognize the difference between a pedestrian and a road surface. The most common problems faced by people with reduced mobility are related to the following elements of infrastructure: sidewalks, pedestrian paths and curbs, pedestrian crossings, intersections, parking lots, footbridges, underground passages, public transport and terminuses, transport terminals, elevators, urban street furniture, etc. In the past period, progress has been made in terms of improving accessibility for users with reduced mobility, mostly in the city central area. The improvements



have not been consistently and continuously implemented on the entire territory of the city area, but they are mostly in the city centre, while in most parts of the city these people still have difficulties in moving due to inadequate architectural and traffic solutions.



*Examples of good environment adaptation to the people with reduced mobility*

## ENVIRONMENT

Environmental conditions are one of the limiting factors when choosing the mode of transport: cycling and walking, combined with efficient public transport, are a preferential choice in acceptable air quality conditions also in periods without extreme weather events. **Air quality** monitoring in Belgrade, within the scope of environmental protection and improvement, is performed by the Secretariat for Environmental Protection of the Belgrade city. Also, the Environmental Protection Agency (SEPA) collects, processes and publishes data for the Belgrade agglomeration within the state monitoring program. Measurements are performed through a network of automatic and semi-automatic measuring stations of the City Institute for Public Health. The



monitoring system includes pollutants from combustion plants, industrial plants and motor vehicles. In the period covered by the annual reports, according to the data from the automatic measuring stations, there are visible trends of decreasing emissions of certain pollutants (soot), but exceedances of tolerance values for particulate pollution (PM10) and nitrogen dioxide (NO2) have been recorded. Due to that, the air quality in Belgrade is classified in the III category: excessively polluted. The air quality index SAQI\_11 describes air quality state in more detail. Marks "excellent", "good" and "acceptable" describe the concentrations of pollutants within the 1<sup>st</sup> air quality category. Critical values for indicative pollutants are given in the table (in µg/m3). In the class of polluted air, PM10 (11-26%) and NO2 (1-11%) dominate as causative agents, and ground-level ozone (O3) also occurs frequently, in 1-18% of cases. The **noise** level in the environment is monitored continuously for 24 hours, twice a year in seasonal cycles, according to the Program for measuring the noise level in the environment on the territory of Belgrade. Measurements are performed by the City Institute for Public Health, and the data are processed and published by the Secretariat for Environmental Protection on a monthly and annual basis. Statistical noise levels and equivalent noise levels are recorded, at three measurement modes (day, evening and night), at 35 locations. Noise in Belgrade comes mostly from traffic, while industry, small business, construction and other activities are of minor importance.



*Structural air quality assessment in Belgrade agglomeration, during period 2010-2017.*

Period Averaging	Pollutants	LV µg/m <sup>3</sup>	TV µg/m <sup>3</sup>	EXCELLENT		GOOD		ACCEPTABLE		POLLUTED		VERY POLLUTED	
24h	SO <sub>2</sub>	125		0,0	-	50,0	50,1	-	50,0	75,1	-	125,0	125,1
	NO <sub>2</sub>	85	125	0,0	-	42,5	42,6	-	60,0	60,1	-	85,0	85,1
	PM <sub>10</sub>	50	75	0,0	-	25,0	25,1	-	35,0	35,1	-	50,0	50,1
	CO	5000	10000	0,0	-	2500	2501	-	3500	3501	-	5000	5001
	O <sub>3</sub> -3h max	120		0,0	-	60,0	60,1	-	85,0	85,1	-	120,0	120,1

Air quality index SAQI\_11

## CURRENT STATE ANALYSIS OF THE PCTS

The market of transport services of the public city transport system, in general, can be characterized as a very attractive market with great potential. Participation of the public city transport system in Belgrade in the total number of realized trips is about 50%, which makes it one of the most attractive markets from the aspect of PCTS<sup>1</sup> participation. If we take into account that pedestrian participation in Belgrade takes part with 24,25%, it can be noticed that Belgraders, together with the system of public city transport, have at their disposal a sustainable, complete and coherent solution for the transport needs realization, i.e. Belgrade transport system provides to its users a combined mobility service, with its sustainable and environmentally friendly systems.

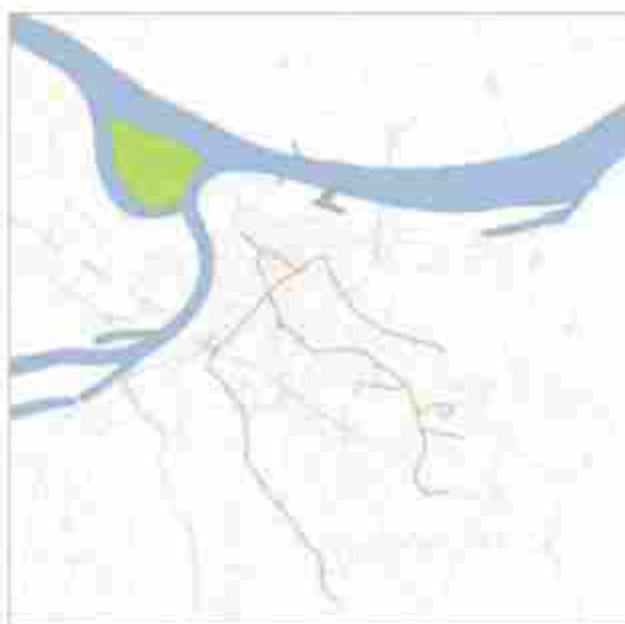
### Organization, management, network of lines

The organization and management of the entire public transport system in Belgrade is the responsibility of the city administration, i.e. the Secretariat for Public Transport. The largest and strategic carrier in the system is the Urban Public Transport Enterprise "Belgrade" (GSP). In addition to GSP "Belgrade", a group of private carriers engaged exclusively in the bus subsystem of public city transport also has a significant market share. The transport network of the public city transport system consists of an integrated one network of all public transport subsystems. The structure of the existing network of lines consists of four subsystems: tram, trolleybus, bus and suburban railway subsystem (BG: train). In the observed time section (April 2019), 171 lines of all listed subsystems are actively functioning in the system, as follows: tram subsystem - 11 lines, trolley subsystem - 7 lines, bus subsystem - 151 lines, suburban railway subsystem (BG: voz) - 2 lines.

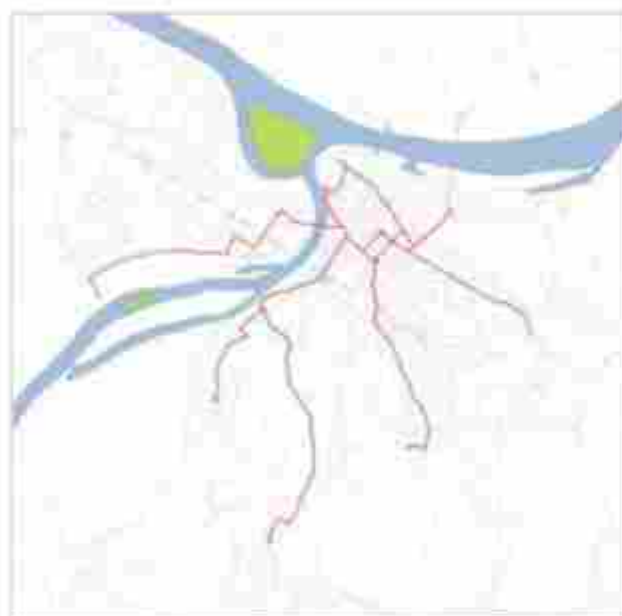
<sup>1</sup> Participation of PCTS (Public City Transport System) in similar cities retrospectively: Prague-43%, Budapest-44%, Vienna-34%, Munich-22% etc.



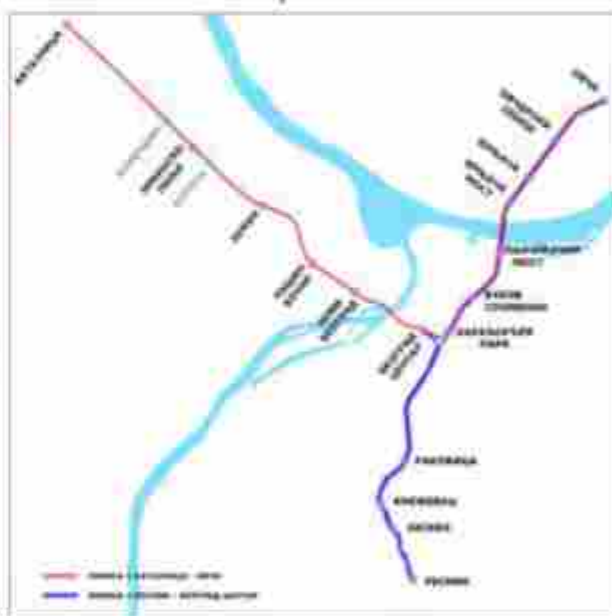
*Bus line network*



*Trolley line network*



*Tram line network*



*BG:voz line network*



## Static characteristics of line networks

The most common peripheral lines in the system are connecting peripheral parts of the city with satellite settlements with a share of 39,18%, as well as radial lines connecting the central city zone with peripheral parts of the city with a share of almost 32,75% in the total number of lines. The other 40 lines are diametrical in type of route (25 of them) - they connect two peripheral parts of the city passing through the central city zone with a share of 14,62% and tangential (15 of them) - they connect peripheral parts of the city tangential to the central city zone). The least represented type of line are circular lines, there are 8 of them, i.e. 4,68%, respectively.

*Line type structures according to the route position in relation to the central urban area*

Route type	GSP Belgrade		Private carriers (PC)		TOTAL	
	Number of lines	Participation [%]	Number of lines	Participation [%]	Number of lines	Participation [%]
Radial	34	31,48	22	34,92	56	32,75
Diametrical	19	17,59	6	9,52	25	14,62
Tangential	6	5,56	9	14,29	15	8,77
Circular	5	4,63	3	4,76	8	4,68
Peripheral	44	40,74	23	36,51	67	39,18
TOTAL	108	100	63	100	171	100

*Basic static characteristics of line networks*

Reg. no.	Subsystem	Line length $L_{\text{km}}$ (m)		Average participation (%)	Number of stops $n_{\text{km}}$		Average participation (%)	Average interstop distance $L_{\text{km}}$ (m)	Operating mid length line $L_{\text{km}}$ (m)
		A direction	B direction		A direction	B direction			
1	BG:voz	40.600	40.600	1,74	21	21	0,52	2.426,00	20.300,00
2	trams	122.228	123.066	6,25	263	264	6,58	483,45	11.149,68
3	trolleys	64.458	64.732	2,34	118	124	3,02	474,89	7.799,29
4	buses	2.138.294	2.093.864	90,67	3.624	3.571	89,87	635,16	14.202,43
SYSTEM TOTAL		2.355.580	2.312.261	100,00	4.026	3.980	100,00	639,79	14.052,68

The largest share in the total length of the network of lines, of as much as 90,67%, have the lines of the bus subsystem (summary suburban and the city ones). As with the length of the lines and in terms of the total number of stops they serve, bus lines also have the largest share (almost 90%) and the smallest share - urban-suburban railway lines (BG: train). The average inter-station line distance in the public city transport system in Belgrade is 639 m. The average operating length of the line with turnarounds is the smallest for the trolley subsystem and is 7.977 m, and the longest for the suburban lines of the bus subsystem - 16.605 m. The tram and bus subsystem (city lines) have an approximate value of the average operating length of the line (11.345 and 12.489 m). The suburban railway subsystem has an average operating length of 23.600 m.

## Dynamic characteristics of lines network

Elements of line functioning are elements by which lines are quantitatively defined in time. The maximum number of engaged vehicles in the system is 1.341 (afternoon peak hour, from 3 PM to 4 PM), of which 1.119 buses (83,45% of the total number), 109 trams, 100 trolleys and 13 BG: trains. Within the system of public transport of passengers in Belgrade, **26.140 departures** are realized on a working day, of which over 84% are realized by the bus subsystem, i.e. 21.968 departures that are realized by city and suburban bus lines. Trolleys and tram subsystems make 2.172 departures, which represents 8,13% and 1.834 (7,02%), respectively, of the total number of departures in the system. The maximum daily value of gross capacity on a working day is 3.616.695 places/day. From the aspect of making a sustainable mobility plan, it is important to mention that since September 2016, the line on which electric buses operate has been functioning in the system of public city passenger transport in Belgrade. Line EKO1: "Vukov spomenik" - Belville quart, is a diametrical line that connects the old and new part of the city.

### Basic dynamic characteristics of Belgrade

Subsystem	BG.voz	trams	trolleys	buses	TOTAL
Number of lines	2	11	7	151	171
N <sub>max</sub>	13	109	100	1119	1.341
Participation (%)	0,97	8,13	7,46	83,45	100
f	168	1834	2171	21.968	26.141
Participation (%)	0,64	7,02	8,3	84,04	100
m	598	227.869	133.375	127.857	1087.101
C	100.464	417.912	2.89.556	2.808.763	3.616.695
Participation (%)	2,78	11,55	8,01	77,66	100
H	—	1.633,63	1.443,85	17.822,44	20.344,34
BTR <sub>1</sub>	3.549	21.628,99	17.522,11	318.423,59	361.123,69
Participation (%)	0,98	5,99	4,85	88,18	100
BTR <sub>2</sub>	2.122.302	4.928.572	2.337.007	40.712.606	50.100.487,00
Participation (%)	4,24	9,84	4,66	81,26	100

Legend: N<sub>max</sub> [vehicles] – max. vehicle no.  
 f [departures/day] – departure per day  
 C [seats/day] – daily capacity  
 H [h/day] – hours per day  
 m [seats/vehicle] – average no. of seats per vehicle  
 BTR<sub>1</sub> [vehicle\*km/day] – gross transport work  
 BTR<sub>2</sub> [seats\*km/day] – gross transport work

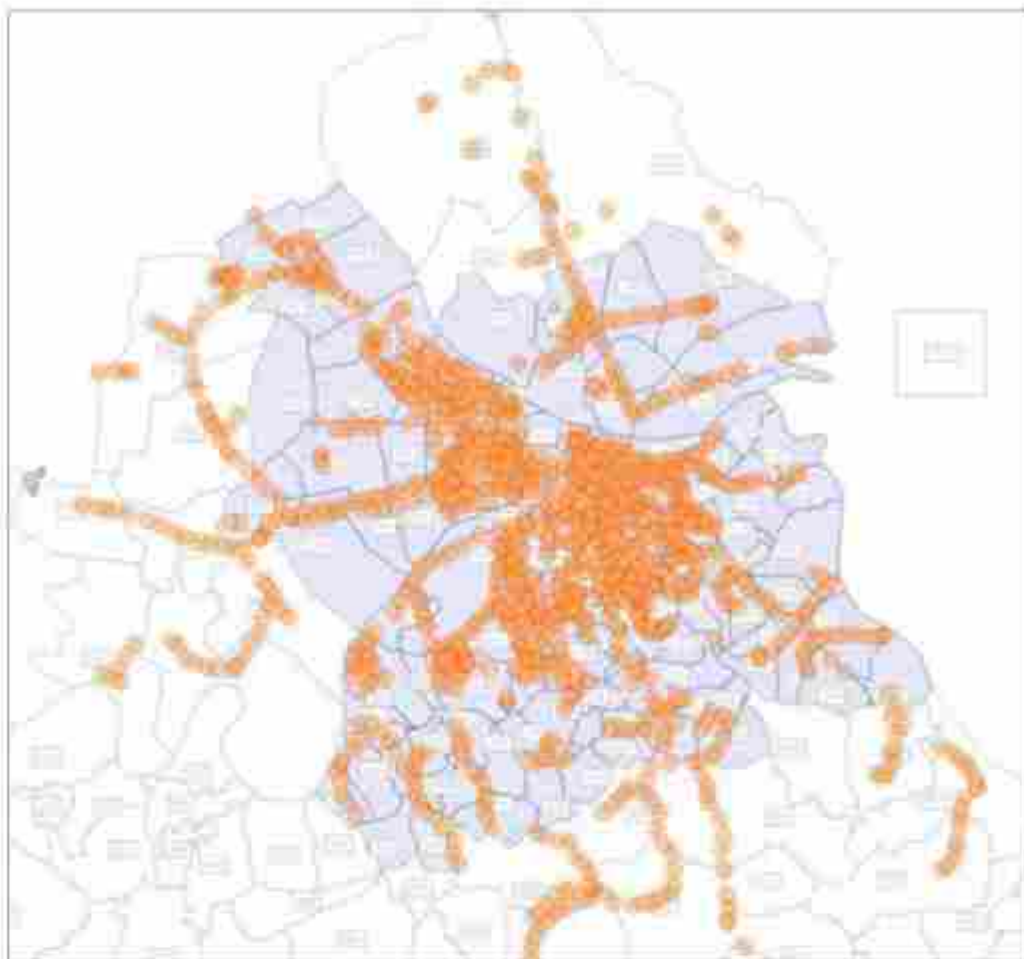
## Quality parameters of transport network

With an exploitation length of 4.068.748 m and a construction length of 2.110.350 m, the network of public city transport lines in Belgrade has an extremely high density of as much as 5,256 km/km<sup>2</sup>. The line coefficient, which represents the ratio of the exploitation length of the network and the total length of the transport network, is 0,578 and about 0,003 km of the network is available to each inhabitant. The coefficient of pedestrian accessibility is as high as 0,7451 for the radius of the gravitational area of the stop of 400 m (following picture). Out of about 77.500 ha of the city area covered by the General Plan and served by the lines of the PCTS, as many as 57.700 ha are located in the mentioned area of influence of public city transport lines. If it is known that the construction area according to the General Plan amounts to about 57.000 ha, it means that the service of the built areas is practically equal to 100%. The average travel time in the system is 32.816 minutes for a journey length of about 7,2 km on average. The compliance of the transport network with the real requirements is indicated by three indicators. The coefficient of directness is 0,628, which means that only every third passenger transfers, i.e. the average number of transfers at the system level is 1,46.

### Line network quality network parameters

Ord. no.	Parameter	Reference and unit of measure	Value
1.	Network construction length	$L_{m}$ [m]	2 110 350
2.	Network operating length	$L_n$ [m]	4 667 841
3.	Overlap coefficient (branching) of line network	$K_z$ [km/km]	2,212
4.	Availability ratio of line network	$A_L$ [km/per citizen]	≈0,003*
5.	Density coefficient of line network (exploitation)	$K_L$ [km/km <sup>2</sup> ]	6,030
	Density coefficient of line network (construction)		2,726
6.	Coefficient scopes line networks – Line coefficient	$K_0$ [km/km]	0,578
7.	Adaptation coefficient of lines network	$K_0$ [–]	1,899
8.	Usage coefficient of lines network	$K_m$ [travellers/km]	7,707
9.	Pedestrian accessibility of lines network	$K_{0a}$ [km <sup>2</sup> /km <sup>2</sup> ]	0,745
10.	Coefficient of directness	$K_d$ [–]	0,628
11.	Average travel time	$T_p$ [minutes]	32,816
12.	Network adaptation coefficient	$K_{0i}$ [–]	1,899
13.	Average number of transfers	$B_0$ [–]	1,460





*System line network availability of the public city transport.*

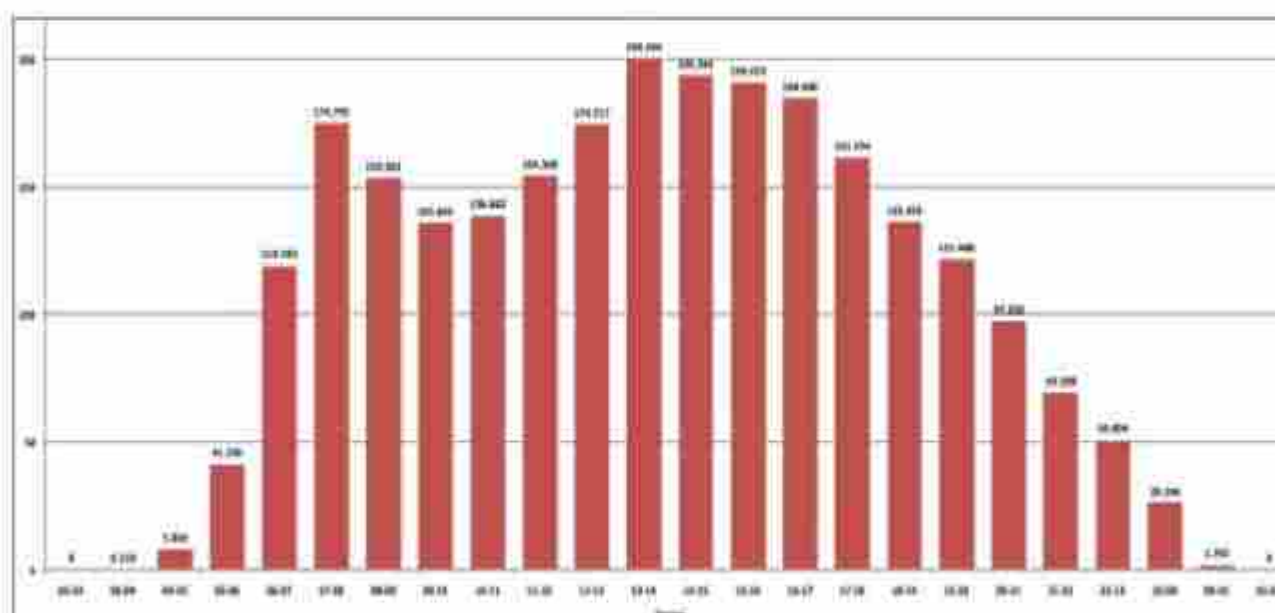
### Characteristics of transport requirements

The public urban passenger transport system transports a total of **2.533.418** passengers during the working day. The most important subsystem is the bus subsystem with a share of 83,20%, while the share of the electrical subsystem (tram, trolleys, city railway - BG: train) is at a low level of only 16,80%. The same participation is in the realized transport work, which at the level of the system amounts to 10.007.992,34 passengers \* km/day. The average driving length in the public city transport system in Belgrade is 3,77 km.

### Characteristics of transport requirements and realized transport work by subsystems

Subsystem	No. of transported passengers - P		Neto transport work - NTR <sub>2</sub>	
	passengers/day	%	passenger*km/day	%
Tram subsystem	237.844,00	9,39	595.988,91	9,39
trolley subsystem	160.573,00	6,34	387.690,53	6,34
bus subsystem - total	2.107.803,00	83,20	8.697.910,21	83,20
Bus subsystem – city	1.727.209,00	68,18	6.267.146,86	62,62
Bus subsystem - suburb	380.594,00	15,02	2.430.764,35	15,02
BG.voz	27.198,00	1,07	326.402,70	1,07
<b>System - TOTAL</b>	<b>2.533.418,00</b>	<b>100,00</b>	<b>10.007.992,34</b>	<b>100,00</b>

The morning peak hour is from 7 AM to 8 AM, when almost 175.000 passengers are transported (about 7%). The afternoon rush hour covers the period from 4 PM to 5 PM, during which over 200.000 passengers are transported. On weekdays, there are almost no deviations in the hourly unevenness because they amount to 1-2%. On Saturdays, the requirements are lower by almost a fifth (coefficient of unevenness 0,786), while on Sundays, about 38% less passengers are transported in relation to the working day.



Time irregularities of transport requirements

## Integration in PCTS system

Integration in the system of public urban city transport is one of the main goals of the system in the near future and aims to create a higher level of service quality in the implementation of urban mobility, ie more attractive, simpler and better use of public city transport by its users. There are three different aspects from which integration in the public city transport system can be observed: physical integration, tariff integration and logical integration. **Physical integration** within each of the represented subsystems in the PCT system is realized on the line routes, and the degree of integration is determined by the percentage share of common sections along the lines of the same subsystem (coefficient of overlapping routes). Widely developed network of urban-suburban lines of the PCT system in Belgrade, serves its transport offer terminals and stops of other aspects of public transport, close locations of stops with these terminals or the necessary lines of the PCT system that connect terminals with certain city zones. The system of public urban transport of passengers in Belgrade at this time does not have a planned and significant implementation of the integration of subsystems with passenger vehicles - systems "Park and Ride" and others. (except at the parking lot in Vladimira Popovića Street), which at the same time represents a significant lack of network. For now, the possibilities of introducing the "Bike and Ride" system have not been used, although cycling is increasingly present in the city's transport system. The main goal of **tariff integration** is to create conditions for users to easily use the system, efficient and economical realization of travel "door to door" by purchasing only one ticket. Tariff integration between the subsystems of public urban passenger transport contributes to the dynamism of the public city transport system and directly affects the modal share of motorized trips in the city, because it improves the number of system users. In the PCT system in Belgrade, complete tariff integration has been achieved between all subsystems, because in the realization of mobility, system users can travel to all existing subsystems of city transport using some of the available tickets from the so-called BUS PLUS system. **Logical** integration aims to inform the passenger about the possibilities of the system, options in the system, to maximally affirm the system of public city transport and is an extremely strong element of support for the full benefits of physical and tariff integration.

## Vehicle depots

In the system of public city transport in Belgrade, there are about 20 depots (bus bases) spatially located in the wider urban area of the city. Within the Urban Public Transport Enterprise GSP "Belgrade"





*Tram-trolley depot - Dorcol*



*Bus depot - New Belgrade*



*Bus depot - Karaburma*



*Bus depot - Kosmaj*



*Tram depot - New Belgrade*

## Terminus

Vehicles of the public city transport system on the urban and urban-suburban network of lines use a total of 141 terminuses. The largest number of terminuses is in the function of the bus subsystem (122), only trolleys terminates at 2 terminals, exclusively tram lines at 5 terminals and the suburban railway subsystem (BG: train) at 3 terminuses. There are also 10 multimodal terminuses in the system, of which 5 are trolley-bus and 5 tram-bus. The busiest terms are in the central city zone (Zeleni venac, Studentski trg and Trg Republike) and terminus from which passengers are transferred from suburban to city lines, i.e. terminus Banovo brdo, Gazela/Belgrade on Water (formerly the Main Railway Station), Omladinski stadion and Ustanička (following picture). Classic terminuses on the network of urban-suburban railway lines - BG: train (Batajnica, Ovča and Resnik) also have the railway station function. Also, one of the important bus terminus from which most suburban buses depart is the Belgrade bus station BAS. The previous suburban terminus that was part of the LASTA bus station was functionally integrated into the BAS enterprise system.

### *No. of terminus according to subsystems*

Terminus type	Bus	Tram	Trolley	Bus- tram	Bus-trolley	BG:voz
Terminus No.	122	5	2	5	5	3



*Terminus "USTANIČKA"*

## Stops and stations

There are 2.715 stops in the city and suburban network. In relation to the use of stops by individual subsystems of urban city transport, the largest number of stops (about 94%) use only one subsystem. Of the total number of stops, about 6% of stops are common to several subsystems (bus-tram or bus-trolley subsystems). In the system of the city-suburban railway, 7 stops envisaged for changing passengers are classic stops (Sebeš, Krnjača most, Vukov Spomenik, Karađorđev Park, Tošin Bunar, Kneževac and Kijevo). Other characteristic points on the BG: train lines have the status of railway stations and/or crossroads and intersections (10 in total). During 2018, the function of the Belgrade railway station (the so-called Main Railway Station) was moved from the Sava amphitheater to the stations "Novi Beograd" and "Beograd Centar". The "Novi Beograd" railway station has 5 tracks of useful length from 560 m to 710 m and 6 platforms of 450 m each. New Belgrade station does not have a station building. "Novi Beograd" railway station is extremely well physically integrated with the network of tram and bus subsystem lines. Although it has been in operation since 1970, the station is not completed in terms of infrastructure. "Beograd Centar" railway station is located in the so-called Prokop zone. Three two-track railways merge into the "Beograd Centar" station and it is planned that there will be 10 tracks in the station. The "Beograd Centar" station is poorly physically integrated with the public city transport system, which still represents a key barrier to its more intensive exploitation and makes it spatially inaccessible.

### *Total number of stops by subsystems*

Type of stops	Buses	Trams	Trolleys	Buses and trams	Buses and trolleys	BG:voz
No. of stops	2.412	119	23	73	81	7

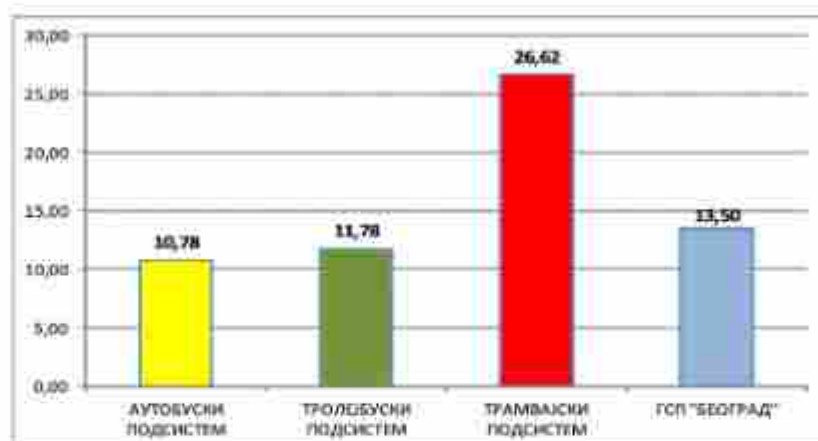
## Vehicles

The carrier of public city transport in Belgrade is GSP "Belgrade", which independently organizes transport on tram and trolley lines, and also owns the largest bus fleet. In April 2019, the fleet of GSP "Belgrade" has 1.147 vehicles, namely: 240 trams (169 articulated, 2 solo, 39 tram trailers and 30 modular ones), 126 trolleys (104 solo and 22 articulated), 735 buses (279 solo, 451 articulated and 5 E-buses) and 46 minibuses for agreed transport and transport of people with special needs. The average age of the fleet of GSP "Belgrade" is the lowest for the bus subsystem (10,78 years) while the highest for trams, almost 27 years on average. The number of vehicles in the inventory of private carriers is 605 vehicles, as follows: 47 minibuses, 524 solo buses and 34 articulated buses. On the lines of the city-suburban railway, mainly electric motor sets are used, which have the possibility of multiplication.



*Total inventory vehicle number and average age of the bus subsystem*

VEHICLE TYPE Carrier's name	Articulated bus	Solo bus	Solo electrobus	Mini bus	Vehicles TOTAL	Average age
Avala bus 500	22 (2,5)	53 (3,1)	0	0	75	2,9
Group PP – Arriva Litas	0	454 (5,0)	0	47 (3,8)	501	4,9
Group PP – Avala bus	12 (11,7)	17 (12,2)	0	0	29	12,0
GSP "Belgrade"	451 (9,5)	279 (12,9)	5 (3,0)	46	735	10,8
VEHICLES TOTAL (average age)	485 (8,3)	804 (7,8)	5 (3,0)	47 (3,8)	1340	8,2



*Average age of GSP "Belgrade" vehicle fleet*



*Trolley - BELKOMMUNMAŠ*



*Trolley - TROLZA*



*Tram - TATRA T-4*



*Tram - Čička*



*Tram - ČKD KT - 4*



*Tram - DÜWAG GT6*



*Tram - CAF Urbos 3*



*Electro-motor set of series 412/416*

## CONCLUSION AND ASSESSMENT OF THE CURRENT SITUATION

The analysis and assessment of the current situation, done for the needs of the development of SUMP Belgrade, as well as recording changes in space by sectoral areas, it is concluded that the planned purposes in terms of transport infrastructure are largely unrealized, and that the primary transport network and parking system are inadequately developed.

Research on the characteristics of the Belgrade transport system is conducted on average every 10 years.

The average number of travels per working day per person is 1,94 (2015), which is a reduced value of the mobility coefficient compared to 2005, when it was 2,18 trips per citizen per day.

The main characteristic of the Belgrade transport system is the high share of public transport in the modal split (about 50% with a trend of slight decline). Passenger car and walking have an equal share with about 24% while the use of bicycles is below 1% mainly for recreational purposes.

In the traffic of the city, the morning and afternoon peak hours (8 AM and 4 PM) with the overflow of congestion into the following hours, which are evident on the network, are clearly distinguished. About 64.5% of trips are shorter than 30 minutes, and 15.8% are shorter than 10 minutes.

As the motorization rate rises (319 PC/1000 inhabitants in 2019) with the improve of standards, the share in the modal split inevitably changes in favor of moving passenger cars. The share of other means will decrease, which is the biggest threat to sustainable mobility.

The limitations of the current situation are reflected in the insufficient segregation of urban and transit, as well as passenger from freight traffic, the lack of alternative connections in connecting the urban area, low capacity of primary city roads and the negative impact of traffic on the environment.

The analysis conducted in the "SmartPlan" study also includes an assessment of trends in the general characteristics of the traffic system, which says that the length and quality of the road network must be improved or improved.

Although the geographical position and climatic conditions enable uninterrupted use of bicycles in the period of 8-9 months a year, the network of bicycle paths has modest capacities and low intensity for most of the year - which is a consequence of unfinished network of paths and endangered safety of cyclists on the city street network.

The current legislation and traffic regulations for the Republic of Serbia territory did not sufficiently cover the cycling infrastructure and its elements.

In the current situation, very large differences have been noticed in the arrangement of urban spaces in the city territory. By moving away from the central city centre to the periphery, but also within the blocks of settlements in the wider centre, one can notice a completely different visual identity of public spaces, which certainly includes pedestrian trips.



In many parts of the city, sidewalks are missing or "filled" with physical barriers as a result of poor ground floor solutions, parked vehicles, inadequately positioned elements of communal infrastructure, which disrupts its function, endangers pedestrian safety and degrades the aesthetics of space.

Analyzing the current state of infrastructure, it is concluded that it is not developed to the extent that would guarantee the satisfaction of all goals and principles of sustainable urban mobility.

Availability to all users is not at a satisfactory level. It is evident that every group of users of the transport system, whether motorized or non-motorized, faces a lack of free space and areas for unimpeded trip. As a consequence of this street network condition, there is a reduced attractiveness and quality of the urban environment.

In all parts of the city, there is a lack of parking space, which, when it comes to street parking, is mainly solved by occupying areas intended for other road users - primarily pedestrians, but also cyclists. This entails a reduction in the safety of traffic participants, a reduction in the flow of certain parts of the primary and secondary street network, an improve in pollution, gas emissions, energy consumption, etc.

The number of accidents with cyclists and pedestrians (non-motorized road users) varies significantly from year to year, which indicates the non-existence or discontinuity in the application of adequate measures to improve the safety of cyclists and pedestrians at the level of the Belgrade city.

If appropriate steps and measures are not taken in the near future, the existing transport system of Belgrade will not be able to provide the appropriate level of service for the city, which is the primary economic and business centre, in terms of economic growth, increasing employment rates, jobs, exchanges with the environment, improved attractiveness for daily migrants, tourists, etc.

An inadequate transport system will be a constraint on economic and general development as it will not allow the mobility of residents and visitors and will not fit into the requirements of sustainable development.

The strategic commitment of the Sustainable Urban Mobility Plan is aimed at creating a sustainable and safe traffic environment, in which better conditions will be created for non-motorized users of the transport system.



**SCENARIOS**

**3.**





## SCENARIOS OF DEVELOPMENT

Consideration of the future development of Belgrade city from the point of view of sustainable urban mobility will be considered in three scenarios, starting from the current state of the transport system.

- No activity (**black**) - do nothing
- Partial (**blue**) - do something
- Total (**pink**) - do everything

Scenario: "No change" (black) - Assumes that the city will develop by natural growth according to existing development trends without planning interventions aimed at reducing the harmful effects of motor vehicles and actively preventing the causes that affect the growth of the greenhouse effect (CO<sub>2</sub> emissions). This development of the city leads to a constant improve in the distance of trip in the city, an improve in the number and improve in the use of passenger cars, which creates a constant spiral of growth in the use of motor vehicles in city transport. This improves the emission of harmful gases, especially CO<sub>2</sub>, which also contributes to the creation of the greenhouse effect on a global level. Trips by car reduces people's daily physical activities and has a bad effect on the health of Belgrade inhabitants.

Scenario: "Partial" (blue) - *do something* - assumes that the city will develop by natural growth, but with a significant influence of SUMP activities and philosophy on the planning and development of the city. This scenario should **realistically** consider possible action plans and their impact on planning and project documentation and the implementation of important development projects in Belgrade. Such a scenario can produce a halt to the growth spiral and transit into reversal i.e. sustained spiral.

The scenario: "Complete" (pink) - *do everything* - gives a possible picture in case the city of Belgrade **makes a significant turn** in its plans, projects and implementation of comprehensive measures with the aim of significantly changing the characteristics of mobility in Belgrade. Such a scenario would require a serious change in the way of thinking and behaving of all, both from those who make decisions and from all residents of the City.

*Comparison of basic indicators according to scenarios*

	Existing	No change	Partially	Complete
Population	1.367.304	mild growth	mild growth	mild growth
Age structure		mild growth	mild growth	mild growth
Mobility	1,94	growth	growth	growth
<b>Modal split</b>				
On foot	25,0%	declining	growing	significantly growing
By car	24,0%	growing	remains the same	declining
Public	50,0%	declining	growing	significantly growing

	Existing	No change	Partially	Complete
By bike	0,7%	remains the same	growing	significantly growing
other	0,3%	declining	growing	significantly growing

*Modal share scenarios*

Modal split	Existing	No change	Partially	Totally
On foot	25%	20%	25%	25%
Passenger car	24%	40%	25%	20%
Public transport	50%	36%	45%	48%
Bicycle	0,7%	1%	3%	4%
other	0,3%	3%	2%	3%

According to estimates for 2015, based on data from the 2011 census, there are about 1.367.304 inhabitants in the GUP. It is expected that by 2031, which is the target year of this SUMP, that number will grow slightly to about 1.500.000 inhabitants, the motorization rate is about 300 cars/1000 inhabitants in 2015 and a slight improve is expected.



*Changes in modal share according to the scenario*



## MODEL SCENARIO ANALYSIS

In order to conduct a qualitative analysis of the developed scenarios, the modeling of scenarios was performed using the Transport Model of Belgrade (TMB). The adopted methodology is based on the assumption that changing the modal share will reduce/improve the number of vehicles used for local trips. At the same time, there will be a change in the degree of utilization of public transport capacity, whereby the number of public transport vehicles will not change. The following steps have been taken in this regard:

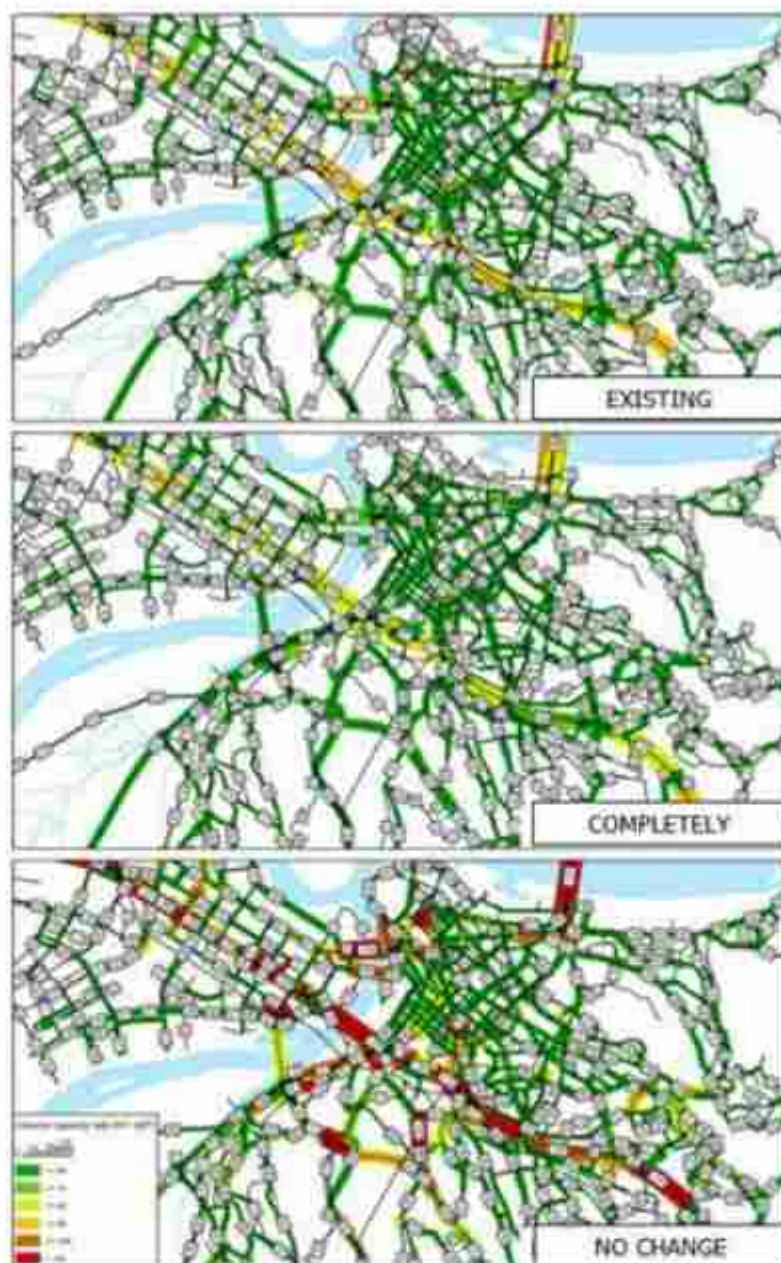
- Depending on the adopted scenario, the matrix of local passenger car trips from TMB has been reduced by appropriate factors to the number of passenger cars on the network corresponding to the participation in the modal share of 24% (current situation), 40% (no change), 25% (partially) and 20% (complete changes);
- The street network that is the subject of this analysis has been identified, i.e. the street network that is covered by the GUP;
- The network load was performed for each scenario by applying the appropriate passenger car matrix for the morning peak hour;
- For each scenario for the subject street network, the parameters vehicle\*kilometers and vehicle\*hours were calculated, which are input data for further analyses;
- An analysis of the obtained results was conducted.

The output results of the modeling are presented in a table for the parameters of the traffic flow at the network level, while the analysis of the flow-capacity relationship is performed graphically.

### *Traffic flow parameters at network level at peak hour*

Existing condition (car 24%)		No change (car 40%)		Partially (car 25%)		Totally (car 20%)	
veh.*km	veh.*h	veh.*km	veh.*h	veh.*km	veh.*h	veh.*km	veh.*h
924.365,8	22.339,7	1.448.350,6	55.083,2	955.711,8	23.584,5	795.006,8	17.564,5

The flow-capacity ratio was conducted in order to identify potential sections where existing bottlenecks could be resolved, i.e. the formation of new bottlenecks. The conducted analysis showed that in the scenario without changes due to the improve in the number of passenger cars, a significant number of bottlenecks are formed in the central city zone. In the scenario, there is a "complete" reduction in traffic load, as a result of which the flow-capacity ratio on the existing network decreases, and in some cases, bottlenecks can be expected to be resolved. There are partly no significant changes in the scenario in relation to the existing situation.



*Q/C according to scenarios in the central part of the city*

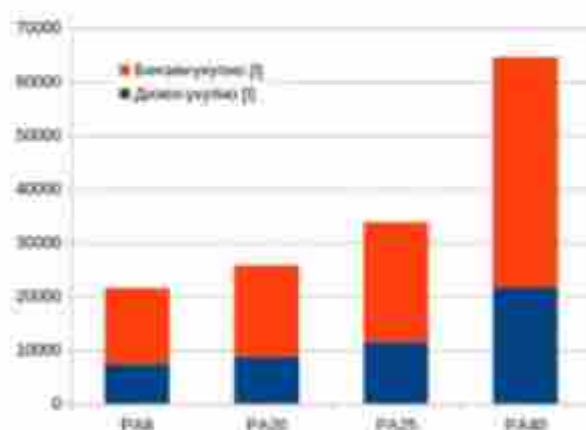
## EMISSIONS OF POLLUTANTS AND CO<sub>2</sub>

Emissions of pollutants and CO<sub>2</sub> were determined by applying HBEFA emission factors, according to the Belgrade transport model (TMB2015), for passenger cars in local traffic, in the morning rush hour. In the VISUM program, within the demand data, the matrices of passenger car representation are changed, and the allocation procedure is performed without changing other model parameters. For the basics (current) condition, the matrix RA8 (morning peak hour, from 7AM to 8AM) is taken from TMB2015, and for the model with 20%, 25% and 40% share of passenger cars, matrices RA20, RA25 and RA40 are constructed. The year 2005. is chosen as the reference year for HBEFA emission factors, primarily due to the composition and Belgrade passenger cars average age. Vehicles powered by liquefied petroleum gas and methane are modeled as vehicles powered by gasoline.

### Mileage and fuel consumption\*

Scenario	Vehicle-kilometers [veh*km]	Petrol[l]	Diesel[l]
RA8	627.743	14.194	7.289
RA20	740.461	16.993	8.721
RA25	932.906	22.332	11.478
RA40	1.651.318	42.864	21.615

\* VISUM does not have possibility of analysis for CNG and LPG



Fuel consumption

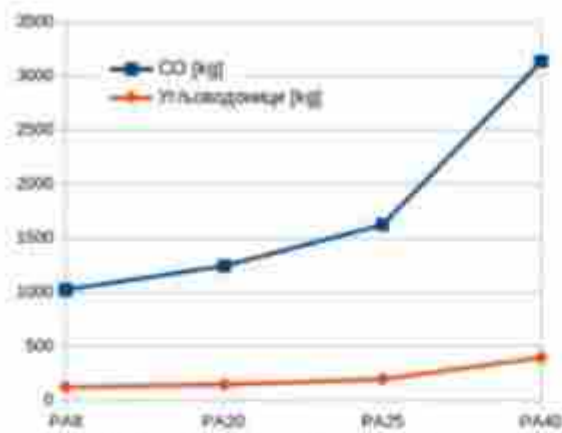


Emissions of CO<sub>2</sub>

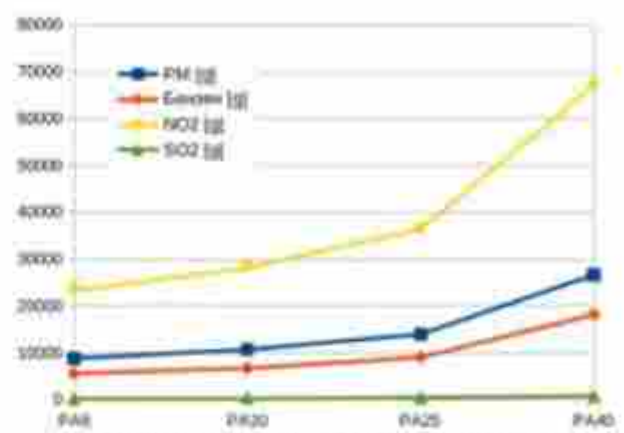
CO<sub>2</sub> emissions are determined on the basis of fuel consumption, not taking into account the share of renewable fuels in total fuel consumption, and not taking into account emissions from the exploitation, processing and



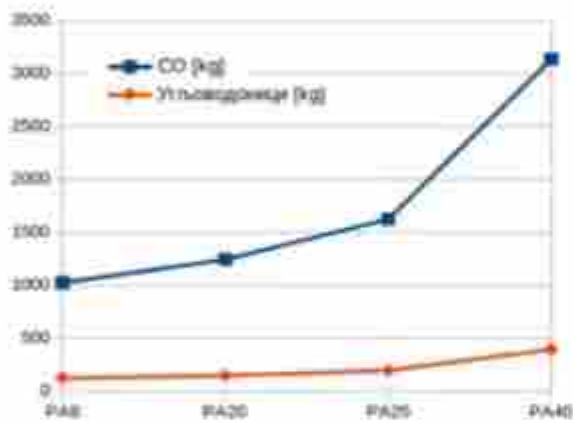
transport of fossil fuels. The emissions shown in the chart. Emissions of carbon monoxide and volatile hydrocarbons, are shown in the graph in kilograms. Particulate pollution (PM) is calculated as total particulate pollution due to fuel combustion, not taking into account other sources of particulate pollution (due to wear of brake linings and tires, dust suspensions, etc.). The primary phase in this pollution is PM<sub>2.5</sub>. Emissions of PM, benzene, NO<sub>2</sub> and SO<sub>2</sub>, expressed in grams, are shown in the graph.



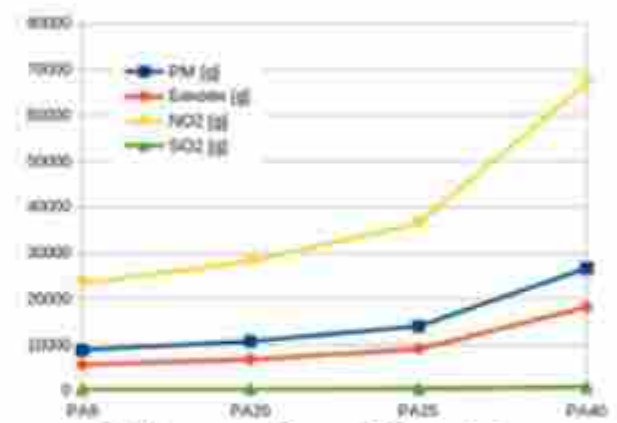
*CO and hydrocarbon emissions*



*Emissions of PM, benzene, NO<sub>2</sub> and SO<sub>2</sub>*



*CO and hydrocarbon emissions*



*PM, benzene, NO<sub>2</sub> and SO<sub>2</sub> emissions*

Particulate pollution per link in TMB2015 is shown in the following graphs.



*Particulate pollution per link (PA8).*



*Particulate pollution per link (scenario PA20%).*



*Particulate pollution per link (scenario PA25%).*



*Particulate pollution per link (scenario PA40%).*

Noise emissions were calculated according to the RIs90 model using the VISUM program module. Noise emissions per link are shown in the following graphs. An improved share of passenger cars in the modal split leads to an improve in fuel consumption, greenhouse gas emissions and pollutants. This improve is not only caused by the improved number of vehicles, but also by slower traffic flow and longer travel times due to traffic network load. Despite the fact that modern diesel engines are equipped with solutions for significant reduction of both particulate pollution and nitrogen oxides, their withdrawal from use in passenger cars in the EU has been announced, as well as measures to ban or discourage their use in some European cities. Mass replacement of fossil fuel-powered passenger cars with other passenger cars, with lower or zero emissions, is not economically feasible within the timeframe of this plan. The improved concentration of irritants and substances directly harmful to health endangers all residents and visitors of Belgrade, especially pedestrians, people with disabilities, cyclists and users of micro-mobile vehicles. Air quality is one of the parameters that influence the choice of means of transport, or the choice of route, and is one of the factors that, according to the principle of positive feedback, reinforce trends in urban mobility: either in the direction of sustainability or unsustainability. The improve in emissions of harmful substances, and the consequent decline in air quality

due to traffic congestion indicate that giving up the use of a passenger car in daily trips due to low quality of service is not a sustainable solution (although it gives a short-term advantage to other modes of transport). A wide range of activities, defined as measures to achieve the goals of Belgrade SUMP, will lead to a reduction in pollutant emissions, improved air quality, and a better quality of life on the go.



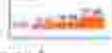
*Noise emission (PAB,)*

Legenda



*Noise emission (scenario PA20%)*

Legenda



*Noise emission (scenario PA25%)*

Legenda



*Noise emission (scenario PA40%)*

Legenda









**VISION,  
PRINCIPLES, GOALS**

**4.**





## SUMP BELGRADE VISION

The vision at the heart of the Sustainable Urban Mobility Plan is a city which is:

**Adaptable** (Srb. **Прилагодљив**) to the needs and requirements of its inhabitants

**Sustainable** (Srb. **Одржив**) with the application of measures for the rational use of energy and reduction of negative effects on the environment

**Excellent** (Srb. **Квалитетан**) - appropriate and desirable for living ("livable city")

**Rational** (Srb. **Рационалан**) through the promotion of "green" modes of transport and rational use of the remaining transport modes

**Efficient** (Srb. **Ефикасан**) with the application of measures to enhance urban mobility and make optimal use of the existing infrastructure

**Tolerant** (Srb. **Толерантан**) towards all groups of users and their specific needs with availability and equal accessibility to all urban facilities

and which will allow its inhabitants to enjoy equal rights, opportunities and freedoms.

Belgrade on the MOVE (Srb. "Београд у ПОКРЕТУ") - the vision to which the Plan aspires is a vision which should make Belgrade adaptable to the needs of its inhabitants, and through the sustainable implementation of a series of measures, make the city healthier and cleaner, attractive as a place to live, rationally serviced by sustainable modes of transport, efficient, more accessible, available and tolerant for all inhabitants...

## SUMP PRINCIPLES AND TENETS

Achieving urban and regional mobility is one of the most important principles in transport policy creation and it requires a multidisciplinary approach and cooperation from all stakeholders. A successful transition to a more sustainable form of urban and regional mobility is a great challenge for cities and requires support in resolving the negative urban planning, economical, ecological and social consequences associated with current mobility models.

In order to make full use of sustainable urban development's potential through a change in the urban paradigm based on integrated and indivisible dimensions of sustainable development - social, economic, and environmental, the following tenets underpinning the Sustainable Urban Development Plan for Belgrade were developed:

1. Promoting sustainable mobility
2. Strengthening social responsibility
3. Promoting equality and respect
4. Protecting the environment
5. People-focused
6. Enhancing quality of life for all inhabitants

## SUMP GOALS

These goals define the desired level of change within the proposed time frame. According to the methodology used for the Belgrade SUMP, these goals are SMART, i.e. Specific, Measurable, Achievable, Realistic and Time-bound, and pertain to the established principles. The goals of sustainable urban mobility planning were generated by identifying the deficiencies and opportunities of the transport system of the city through a process of analysis of the current conditions through workshops, discussions, debates and public consultations with citizens and stakeholders.

The Sustainable urban mobility plan pertains to all areas related to or affected by transport: quality of life, social effects, environmental effects, access to facilities, costs, etc. so that specific goals are identified in order to ensure a better quality of life in the urban environment is achieved and that the existing and future mobility needs of the city's inhabitants are met:

1. Prioritise pedestrian trips while retaining (or increasing) their modal share in the coming period by improving pedestrian infrastructure (25%);
2. Prioritise cycling in daily trips and improve its modal share (4%);
3. Maintain the high public transport system modal share and improve quality of service (minimum 48%)<sup>2</sup>;
4. Reduce passenger car use (20%)<sup>3</sup>;
5. Promote social justice and equality, provide availability and accessibility for all citizens and improve the level of safety of traffic participants and public spaces;
6. Preserve and enhance natural resources;
7. Reduce harmful emissions and energy use;
8. Improve attractiveness and quality of the urban environment;
9. Enable balanced development of all Belgrade municipalities and improve their mutual as well as wider, regional connections.

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<sup>2</sup> By improving and providing conditions for the operation and establishment of a high-capacity railway public transport system as well as conditions for the establishment of a river public transport system

<sup>3</sup> By increasing the competitiveness of sustainable and environmentally friendly systems: electromobility, multi-mobility, ecomobility - and the quality of transport services in relation to passenger cars, the development of the MaaS concept, etc.

Achieving these goals will ensure:

- Modal shift away from passenger cars to a higher cycling modal share;
- A regulatory framework for subventions and tax relief as stimulative or repressive measures for the relevant mode of transport selection - changing behaviour patterns in favour of hybrid and electric cars;
- Establishing a rational level of electromobility through electrification of the city fleet and increasing electromobility;
- A denser and more flexible public passenger transport network;
- Establishing the MaaS concept (Mobility as a Service - a way of providing transport services, offering users a personalized package of multimodal mobility services (car-sharing, public transport, taxi, bicycle, etc.) in a completely integrated way);
- Establishing multi-mobility - stimulating the use of passenger cars by more than one user (car sharing, car pushing, car pooling, etc.);
- Establishing ecomobility with the aim of improving the ecological sustainability of transport and environmental protection;
- Reduction of traffic congestion on critical sections of the road network (bridges, tunnels, etc.).







**MEASURES,  
ACTIVITIES**

**5.**





## MEASURES

SUMP involves a complex planning process that has included many and diverse participants, steps and activities. In a time of transition and economic crisis it is imperative to secure certain resources to resolve the issue of sustainable urban mobility. With real, decades-old problems in Belgrade worsening with time, the primary concern certainly is ensuring that a selection of realistic and financially feasible measures provides solutions which will make the transport system of the city more wholesome and unique.

The proposed measures are in keeping with the characteristics and potentials of the city of Belgrade, the existing condition of the elements of the transport system of the city, economic possibilities and sources of financing. A selection of realistic and efficient measures, sets of measures, and activities has been selected and these have been evaluated against real demands, problems, and required resources. The proposed measures and activities will contribute to the achievement of the vision and goals.

### 1. PRIORITISE PEDESTRIAN TRIPS WHILE RETAINING (OR INCREASING) THEIR MODAL SHARE BY IMPROVING PEDESTRIAN INFRASTRUCTURE (25%)

#### 1.1. Improving existing pedestrian infrastructure

##### Proposed implementation coordinators:

- *Secretariat for Transport*
- *Belgrade Land Development Public Agency*
- *PE Roads of Belgrade*

This measure envisages the improvement of the existing pedestrian infrastructure in the planning area, which consists of pedestrian communications constructed in the horizontal plane, which can be dependently or independently positioned in relation to the roads, and in relation to the vertical plane can be at-grade or separated. This measure includes the following elements of pedestrian infrastructure: sidewalks, footpaths, pedestrian crossings, pedestrian islands, underground and aboveground pedestrian links (underground passages and footbridges), elevators, traffic signals and equipment intended for pedestrians (urban furniture, lighting, etc.).

**Indicators:** Improved participation of pedestrian trips in the total modal share, length (surface) of newly constructed/reconstructed sidewalks in km (m<sup>2</sup>), length (surface) of newly constructed (reconstructed) footpaths in km (m<sup>2</sup>), the number of newly constructed/reconstructed underground passages, walkways and elevators, service level at pedestrian crossings – signalized and unsignalized, level of service on pedestrian corridors, number of traffic accidents involving pedestrians that are caused by inadequacies in infrastructure and signalization



## 1. PRIORITISE PEDESTRIAN TRIPS WHILE RETAINING (OR INCREASING) THEIR MODAL SHARE BY IMPROVING PEDESTRIAN INFRASTRUCTURE (25%)

### 1.2. Improving connections with other modes of transport

#### Proposed implementation coordinators:

- Secretariat for Transport
- Secretariat for Public Transport
- Belgrade Land Development Public Agency
- PE Roads of Belgrade

This measure envisages the improvement of connections, primarily, pedestrian links with the subsystems of public transport, through the improvement of pedestrian infrastructure and signalization at the seats of communication with this subsystem.

The measure also envisages:

- improving the accessibility of pedestrian links and other transport modes
- improvement of visual communication systems, i.e. information systems, which enable efficient user guidance and establishing connections with other modes
- improving pedestrian links in car parks and terminals
- equipping and arranging terminals and stops in accordance with the needs of pedestrians

In particular, improvements are planned for the connections of non-motorized users with the subsystem of the city railway in Belgrade (BG Voz). It is planned to improve accessibility from/to stations and railway stops, construction and improvement of pedestrian infrastructure, construction of elevators at BG Voz stops, as well as improvement of the entire signalization in the areas of stations and stops of the mentioned subsystem.

**Indicators:** Number of completed locations





## 1. PRIORITISE PEDESTRIAN TRIPS WHILE RETAINING (OR INCREASING) THEIR MODAL SHARE BY IMPROVING PEDESTRIAN INFRASTRUCTURE (25%)

### 1.3/8.3. Developing pedestrian and integrated roads, super-blocks and spaces

#### Proposed implementation coordinators:

- *Secretariat for Transport*
- *PE Roads of Belgrade*
- *Belgrade Land Development Public Agency*

This measure envisages the "opening" of urban areas of the city for non-motorized users, while parts of the network or entire zones are completely or partially closed to motor traffic. In addition, it is possible to free areas from parked vehicles and other facilities that take up space and/or obstruct the trip of pedestrians. This measure entails:

- realization of new and expansion of existing integrated streets and areas, super-blocks and spaces, "zone 30", etc.
- rearrangement of street furniture and traffic signal elements at existing locations of pedestrian zones and integrated streets



The described measure is most often applicable on the roads of the secondary network, i.e. on the streets of local and block type, due to their traffic/design characteristics, as well as in the parts of the city that are of special cultural-historical significance. The defined measure provides a comfortable, safe, secure and environmentally harmonized area for all traffic participants, while the main advantage of this measure, on the one hand, is the improve in the share of pedestrians (and cyclists) in the overall modal split, and on the other, sustainable mobility at the level of the city. Lower-ranking roads are unregulated in the current condition, and in most cases dominated by vehicle parking, often on pedestrian surfaces. In such situations, pedestrians use the roadway to move, as a result of which they put themselves in danger. In order to improve the safety of users, but also to create conditions for efficient management of motor traffic through lower-ranking roads, it is necessary to consider the creation of lanes with "zone 30" regimes or integrated traffic, i.e. "slow traffic zones". Streets with integrated traffic are streets in which the available space is divided between motorized and non-motorized users, with pedestrians being the ones who have the advantage. Vehicles in these zones move at a speed of about 10 km/h, and with special construction measures and various pavements, motor vehicle drivers are informed that they are approaching a street where they have to reduce their speed and pay special attention to pedestrians. The priority for the formation of "zone 30" and integrated streets is given to blocks in which housing dominates, and where there are local "service" facilities such as kindergartens, schools, children's playgrounds and parks, sports fields within the block. Streets with integrated traffic can be established in a part of an urbanized area of a community or city, provided that a block or more adjacent blocks contain parts of the street network where the implementation of this kind of traffic regime is realistically feasible and useful for local residents. The network must be connected and there should be spatial possibilities for its reorganization, just as it is necessary to have the possibility of rearranging the internal spaces of the block. The network of streets on which an integrated traffic regime is being introduced should be of local rank, while the perimeter of the

zone may consist of higher-ranking streets. This network must not be intended for public transport vehicles (they can only move around the perimeter of the zone), nor be part of (priority) routes for police or ambulances and firefighters. Public transport in pedestrian and integrated streets, super-blocks, "zones 30", etc. can be organized by paratransit, such as: "Sparrow" service, electric minibuses, etc.

**Indicators:** Monitoring the ratio of proposed to completed pedestrian spaces and zones in m<sup>2</sup>, level of user satisfaction



## 2. PRIORITISE CYCLING IN DAILY TRIPS AND IMPROVE ITS MODAL SHARE (4%)

### 2.1. Cycling network development (paths, lanes, parking lots)

#### Proposed implementation coordinators:

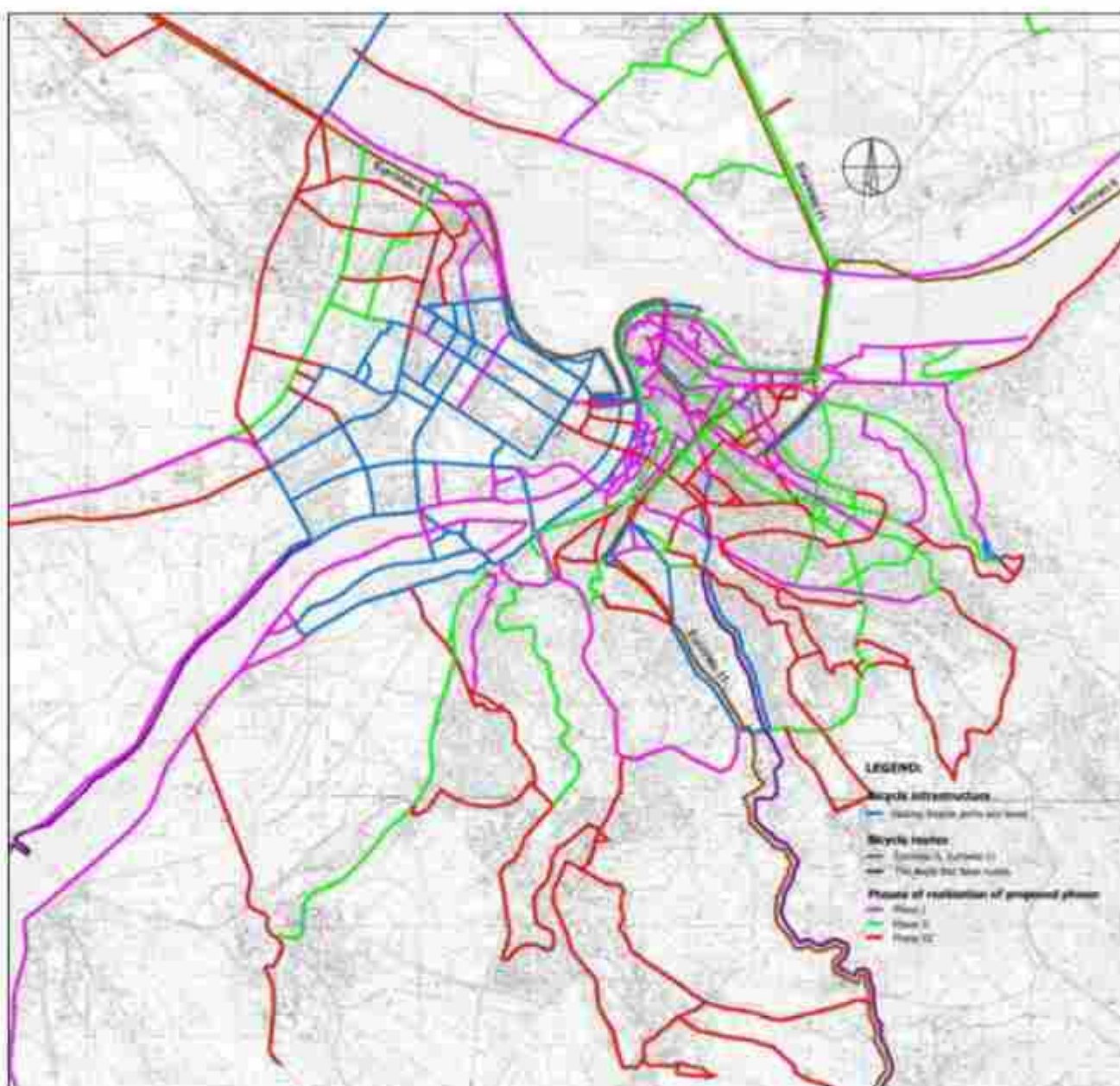
- Secretariat for Transport
- PE Roads of Belgrade
- Belgrade Land Development Public Agency

The basic precondition for achieving the goal envisaged by this Plan (increasing the share of bicycle traffic in the total modal split) is the construction and development of bicycle infrastructure. It is necessary, first of all:

- to create infrastructural and other conditions for bigger share of bicycle traffic in the modal split, having in mind the climatic conditions, congestion of the network with passenger vehicles, as well as the positive ecological and health aspect of using this means of transport.
- to improve the safety of cyclists
- to establish better connection and attractiveness of the Plan area in this respect







*Network of planned bicycle paths*

In that sense, this measure envisages the following:

- construction of the planned bicycle lanes and paths, as well as missing links with the aim of establishing a continuous network of bicycle infrastructure in the area of the Plan
- introduction of "protected" lanes for cyclists
- use of one-way streets in the opposite direction for bicycle traffic
- use of "bus lanes" for bicycle traffic
- implementation of measures for "traffic calming" in the zones of bicycle routes and in places of more intensive bicycle traffic
- creating conditions for the development of intercity bicycle traffic: Belgrade-Pančevo, Belgrade-Zrenjanin, Belgrade-Ostružnica, Belgrade-Obrenovac, etc.
- construction of bicycle stops and new parking capacities: parking racks and bicycle garages in the city area, in accordance with the requirements
- defining urban planning norms, as well as the necessary regulations for the regulation of bicycle traffic, both dynamic and stationary
- establishment and promotion of "cargo bike" service
- conducting campaigns to raise awareness and educate ALL users, with the aim of enabling safer use of bicycles in traffic

The planned network of bicycle paths covers 504,8 km, with realization in three phases: Phase I (2021 - 2023): 144,4 km; Phase II (2024 - 2028): 94,7 km and Phase III (2026 - 2031): 265,7 km.

**Indicators:** Length of newly -constructed bicycle infrastructure network expressed in km, number of users on the network, level of bicycle infrastructure service, improve of bicycle share in modal split, reduction of harmful gas emissions, noise level reduction, level of user satisfaction with service, number of traffic accidents involving cyclists, number of bicycle parking and their utilization

## 2. PRIORITISE CYCLING IN DAILY TRIPS AND IMPROVE ITS MODAL SHARE (4%)

### 2.2. Improving the existing cycling infrastructure

#### Proposed implementation coordinators:

- *Secretariat for Transport*
- *PE Roads of Belgrade*
- *Belgrade Land Development Public Agency*

The measure envisages the improvement and maintenance of bicycle infrastructure (road surface, traffic signals and equipment), in order to reach the defined value of the percentage share of bicycle traffic in modal split.

This measure entails the following:

- reconstruction of intersections and crossings of bicycle paths – curb height adjustment and other elements of traffic infrastructure (islands, raised crossings, etc.) in accordance with the specific location
- equipping existing paths, intersections and crossings, with appropriate equipment and signalization – protective fences, urban furniture, traffic signs and signs for safe cycling)
- updating and improvement of the navigation and information system for bicycle users (traffic signals, development of appropriate applications, etc.)
- revitalization and maintenance (repair of potholes and damage) of the existing cycling infrastructure
- regular summer and winter maintenance of cycling infrastructure, signalization and other elements of traffic equipment, in order to provide the required functionality in all time periods
- use of one-way streets in the opposite direction for bicycle traffic
- use of "bus lanes" for bicycle traffic
- implementation of measures for "traffic calming" in the zones of bicycle routes and in places of more intensive bicycle traffic
- maintenance and improvement of existing elements for bicycle parking
- arrangement and maintenance of common/shared spaces for non-motorized and motorized users in the central zone
- improvement of the existing infrastructure in order to ensure the functionality of electric bicycles – it is planned to set up and maintain charging stations, as well as to arrange special stops and parking lots in order to ensure the required safety and security of users







**Indicators:** Length of renewed, improved and/or maintained bicycle infrastructure network expressed in km, number of users on the network, level of service of cycling infrastructure, improve of bicycle traffic participation in modal split, level of user satisfaction with service, number of bicycle parking and their utilization, number of traffic accidents involving cyclists caused by deficiencies of infrastructure and signalization

## 2. PRIORITISE CYCLING IN DAILY TRIPS AND IMPROVE ITS MODAL SHARE (4%)

### 2.3. Implementing a public bicycle system (Bike sharing)

#### Proposed implementation coordinators:

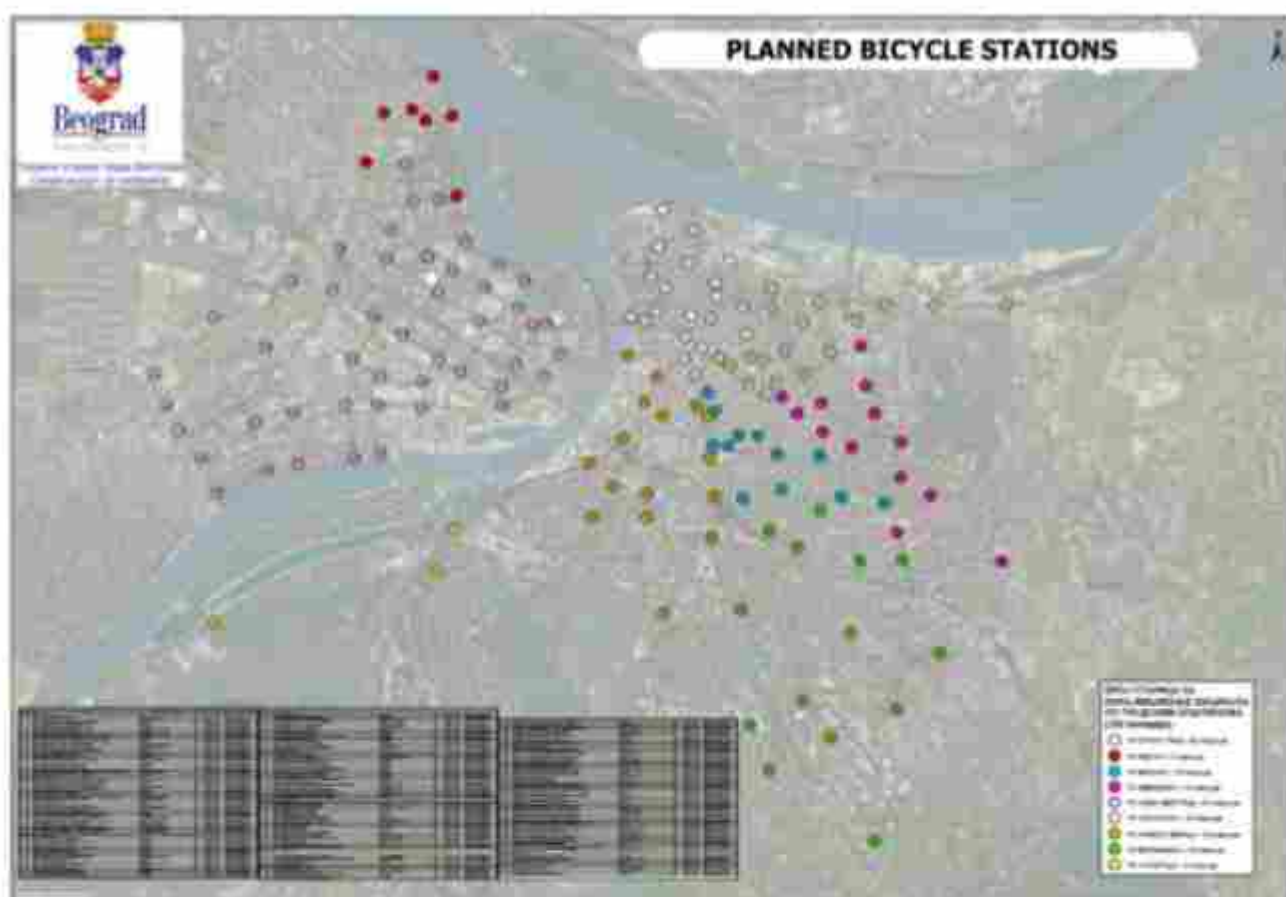
- *Secretariat for Transport*

It is planned to implement a system of public bicycles into the transport offer of the city, as an alternative type of transport and one of the possibilities for improvement of the existing traffic system. The public bicycle system is a service that allows users to rent bicycles for short distances, which expands the tourist offering of the city. The implementation of this measure envisages:

- establishment of this system in the area of Belgrade through the construction of bicycle stations
- monitoring the effects of the implementation of public bicycle systems
- defining measures for maintenance and improvement of the future system in accordance with the objectives of point 2.2 of this document



**Indicators:** Number of bicycles and bicycle stations, number of trips/day/bicycle, number of rented bicycles/day, changes in the number of users per bicycle/day, rental income



*Planned bicycle stations*

## 2. PRIORITISE CYCLING IN DAILY TRIPS AND IMPROVE ITS MODAL SHARE (4%)

### 2.4. Enabling transport of bicycles within vehicles of the city's public transport system

#### Proposed implementation coordinators:

- *Secretariat for Transport*
- *Secretariat for Public Transport*
- *PUC Belgrade Metro and Train*

Infrastructural measures that include the installation of bike racks inside public transport vehicles, installation of external bike racks that will enable tying bicycles to public transport vehicles, as well as adjustments of the height of station platforms to vehicles, should be preceded by legislation that will define the manner and time frame in which bicycle users can use public transport vehicles. When defining the time frame, it is necessary to take into account the crowds that occur in the morning and noon peak hours, public holidays and days of the week. Also, the time frame may differ for different modes of public transport, whether this is the bus subsystem, tram, trolleybus and trains.

**Indicators:** Changes in the modal share, number of bicycles transported in public transport vehicles





## 2. PRIORITISE CYCLING IN DAILY TRIPS AND IMPROVE ITS MODAL SHARE (4%)

### 2.5. Promoting cycling tourism, realisation of Eurovelo routes and bed&bike

#### Proposed implementation coordinators:

- *Tourist Organization of Belgrade*
- *Secretariat for Transport*

2 Eurovelo routes pass through Belgrade, EV6: Atlantic-Black Sea and EV11: Eastern European route. The Danube has always been an attractive destination for tourists, and by marking Eurovelo bicycle routes, Belgrade has become the center of cycling tourism for the "middle part" of the Danube. In order to improve the offer for cycling tourism, it is necessary to make a comprehensive analysis of the existing capacities, give a proposal for the improvement of the offering, create special guides and brochures for users, etc. In this sense, certain activities have already been undertaken, such as the initiative of the Association "Sport for All", which published the brochure *Cycling Guide through Belgrade*, which contains information about the possibilities for stays, sightseeing, day-touring and accommodations for an easier and more enjoyable visit to Belgrade. To fully use the potential of Eurovelo routes that pass through Belgrade, preparation of a study is proposed, considering of the condition of the routes, in terms of passability, activities (bicycle parking, bicycle rental, showers, tourist information, technical support), maintenance level, available capacities, lodges, shelters, resorts, complementary services, etc.), signalization, as well as the necessary investments for the completion and regular maintenance of routes through Belgrade. The study should also propose locations that would be equipped according to European standards for bed-and-bike, which include the following basic requirements: permits one-night-only stays for cyclists, a secure locked room for free bicycle storage overnight (preferably on the ground floor or a basement, e.g. garage), space to dry clothes and travel equipment (e.g. drying room, tumble dryer, etc.), breakfast or use of a kitchen, distribution or sale of regional maps/cycling maps, bus/train/ferry timetables, information about attractive excursion sites in the area, availability of tools for simple repairs, information about the location, working hours and telephone numbers of the nearest bicycle services (mechanics) in case of major breakdowns, free use of computer and Wi-Fi, an equipped common kitchen, reading room, rest room, TV, luggage room, bathrooms, towel rental, laundry service, ATM, etc. Additional offerings: bicycle rental, or bicycle rental as well as a recommendation for another rental at the destination (offering, telephone number), possibility of transferring luggage from the previous accommodation facility to the next facility, offer of daily bicycle routes - excursions, reservation of overnight stays in the next bed & bike accommodation, possibility of availability of the primary spare parts as needed in agreement with the nearest mechanic (pumps, brakes, tires, etc.), list of other bed & bike accommodations in the region, packed lunches, guest book for cyclists, etc. Basic requirements for campsites: separate areas in the camp for non-motorized guests, grass areas for tents (gravel or compacted earth are not acceptable), free parking of bicycles in sight of the tent, no additional charge for campers for accepting bicycles in the camp premises. Additional offerings in campsites: covered camping spot or secure locked room, possibility of cooking for guests (kitchen), shop - possibility of buying the most necessary, basic groceries, well-lit pathway to the tent,



information about other bike-friendly campsites nearby, possibility of renting tents, camping equipment, bungalows, quality bike rental or recommendation for another rental in the destination (offering, phone number), possibility of transferring luggage from the previous accommodation facility or to the next facility, offer of daily cycling routes – excursions, booking of accommodation in the next bed & bike, possible availability of primary spare parts as needed in agreement with the nearest mechanic (pumps, brakes, tires, etc.), list of other bed & bike accommodations in the region, packed lunches, guest book for cyclists, distribution or sale of regional/cycling maps; bus/train/ferry/plane timetables so that, among other things, visitors can learn about the attractive daytrips in the surrounding area, access to tools for simple repairs, space for drying clothes and equipment (e.g. garage), etc.

**Indicators:** The rate of completion of the construction of premises and routes, number of users of the centers



*EuroVelo Routes*



### 3. MAINTAIN THE HIGH PUBLIC TRANSPORT SYSTEM MODAL SHARE AND IMPROVE QUALITY OF SERVICE (min. 48%)

#### 3.1. Development and Improvement of the structure and operation of the entire public transport system

##### Proposed implementation coordinators:

- *Secretariat for Public Transport*
- *Secretariat for Transport*
- *Transport engineering companies*

Development and improvement of the structure, operation, organization and management of the public transport system in Belgrade should aim towards creating conditions for the implementation of a continuous process of positioning the system in the future, in terms of its sustainability and independence, by defining goals that the system wants to achieve, as well as ways to achieve the goals of the system as a whole. Development and improvement should be focused on all existing and possible applicable subsystems of public mass passenger transport (bus, trolleybus, tram, metro and suburban railway), subsystems of flexible passenger transport (primarily taxi, public bicycle and ride sharing) as well as subsystems of special transport (primarily an escalator that connects the Terazije plateau and Belgrade Waterfront). The development and improvement of the public transport system in Belgrade should also include the development and improvement of traffic infrastructure and traffic signals which will improve the management of trip priority of public transport vehicles. To this end, in the coming period the city of Belgrade should develop and implement an action plan with detailed activities by subsystems aimed at creating conditions (entry) for long-term optimal, durable and quality solutions to improve the quality of the transport service, its efficiency and effectiveness, as well as the management of the entire system, by use of a comprehensive analysis of the entire passenger transport system and the full range of professional activities. The main goal of the Action Plan is to guide the existing system of public transport in Belgrade into the future desired state without sudden changes and unforeseen circumstances, i.e. to bring the system into a state of complete order with its basic characteristic aimed at producing quality transport services at reasonable prices for users and operators of all ownership types, having in mind the real intrinsic possibilities of the system and the city of Belgrade. When defining the Action Plan, it is necessary to apply the principles of goal-oriented planning and postulates of systemic transport engineering as well as the bottom-up approach – one where system requirements arise directly from the needs of stakeholders – key actors in the system. When setting goals, it is necessary to take into account that the goals should be complementary to the goals of the development of higher systems (city and city transport system) and ensure the following:

- satisfaction of most of the needs and interests of all residents of the urban area in the process of realizing mobility
- good quality of mobility realization for all inhabitants of the urban area by use of the public transport system





- sustainability of the system with improvement of production, economic, and environmental efficiency
- availability of major activity centers without chronic congestion and unnecessary waste of time
- development of a multimodal system and combined mobility in order to efficiently achieve the required mobility patterns
- an improve in the competitiveness of the system and the quality of transport service in relation to the private car, especially in the central urban area and along the main corridors
- the possibility of applying modern technical and technological innovations
- realistic and feasible goals in terms of the planning period
- adherence to the principles of hierarchy in achieving goals (primary, secondary ...), etc.

After the stated goals are reached and the Action Plan is realized, it is realistic to expect that the system of public transport will possess the following system characteristics, i.e. it will:

- ensure the production and realization of the required volume and quality of transport service in the observed period of time, especially in areas where the concentration of activities is highest
- be comfortable and accessible in space and time, i.e. provide service to all areas where there is a need for transport
- function reliably, efficiently, and with good quality in space and time
- be available for use, i.e. be available to all citizens under equal conditions which are known in advance
- include reasonable costs for an adequate price of the transport service
- be integrated into the city transport system which is designed and functions in such a way that each of the subsystems in synergy with the others contributes to the maximum efficiency and quality of the system as a whole
- be modally balanced in order to rationally use resources and achieve maximum efficiency and effectiveness
- provide facilities and services that are efficiently integrated into the humanely oriented urban environment.
- stimulate the desired urban development and form of the city
- have mild negative environmental side effects
- be safe and secure to use
- be adaptable in terms of constant adjustment to the requirements and goals of users and higher systems, etc.

It is also very important that, in the definition of future strategic documents, the city of Belgrade adopts the principles of the **European Mobility Manifesto**, which was launched in February 2019 at the EU level, highlighting four key points with the main goal:

- **POLICY** - ensure conditions for the technology of mobility realization to be above all relevant new policies of the city of Belgrade
- **FINANCING** - give priority to urban change in the budget, especially for investments in mobility
- **MULTIMODALITY** - ensure the role of the public passenger transport system as a key service and the backbone of all mobility services
- **BETTER REGULATION** - provide the change and adjustment of the legal framework to maintain mobility at the top

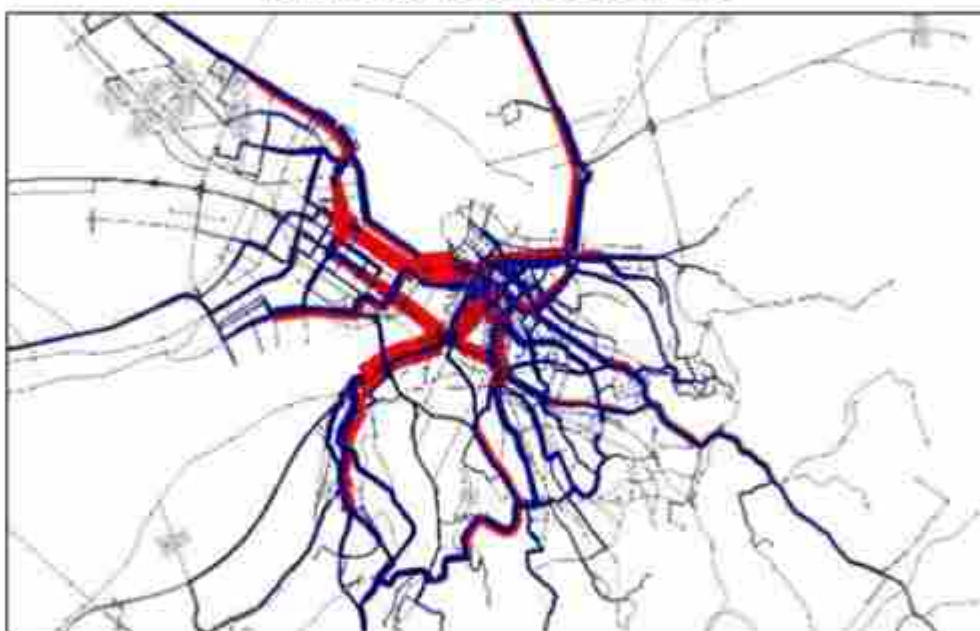
Measures to improve the sustainable public transport system in Belgrade:

- continuous development of the public transport system in Belgrade in accordance with the development of the city and the development of new city areas and facilities
- extension of the network of lines and network of public transport system stops
- construction of new tram and trolleybus infrastructure
- continuation of reconstruction of tram infrastructure, reduction of noise and vibrations as well as tram subsystem operation costs
- better availability of public transport lines, i.e. better coverage of the city territory by public transport
- Procurement of new vehicles with environmentally friendly propulsion, electric buses, trolleybuses with autonomy, trams, gas buses and modern diesel engines
- adjustment of timetables and number of vehicles to actual transport requirements
- relocation of public transport terminuses from the central parts of the city to peripheral locations
- reorganization of the line network, i.e. reduction of radial lines to a minimum - application of the principle of stopping more lines at external terminals
- implementation of modern technologies and equipment in vehicles and at stops for monitoring public transport vehicles and informing passengers about the public transport operation, lines, timetable, arrival of vehicles at stops, etc.
- construction and marking of "bus lanes" and other independent routes for the trip of public transport vehicles
- completing and equipping stops with modern equipment
- giving priority to public transport vehicles at traffic light intersections and traffic-laden corridors
- improvement of tariff policy, ticket system, method of payment and improve of payment for public transport services

**Indicators:** Construction network length, Exploitation network length, Line network overlapping - branching, Line network complexity, Stops density, Line network availability, Line network density (exploitation), Line network density (construction), Line coefficient, Line network adaptability, Line network directness, Line network utilisation, Stop catchment area, Average distance between stopsstop distance, Production efficiency, Economic efficiency (estimation), Cost efficiency (estimation), Average number of transfers, Travel speed, Average travel length, Total number of passengers, Total number of line network departures, Total number of line network turnover, Gross transport work on line network



*Network of public transport system lines*



*Load the street network with the PCTS*



### 3. MAINTAIN THE HIGH PUBLIC TRANSPORT SYSTEM MODAL SHARE AND IMPROVE QUALITY OF SERVICE (min. 48%)

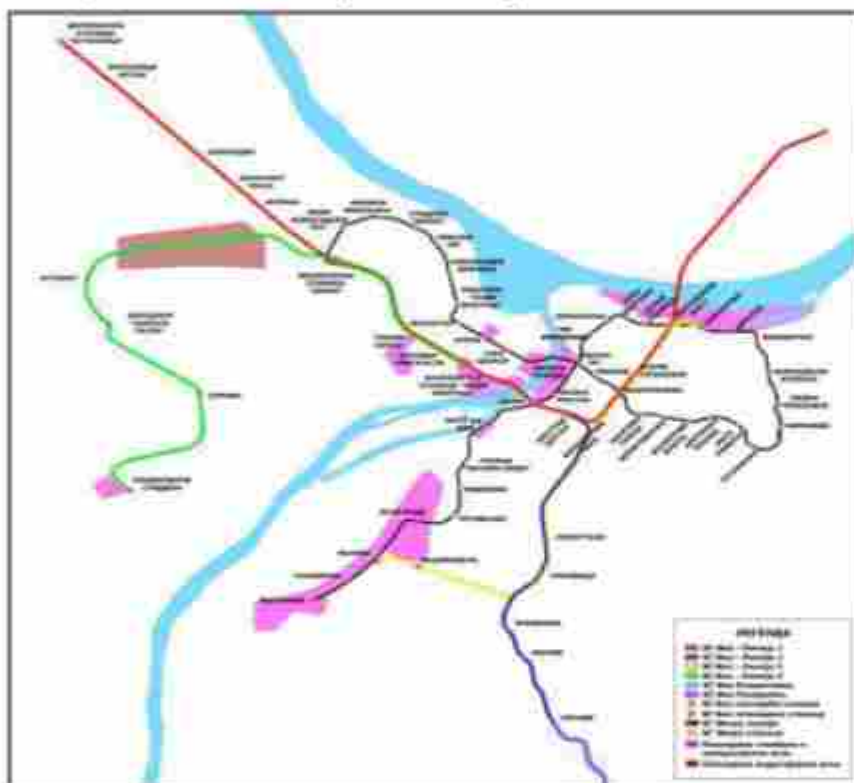
#### 3.2. Development and Improvement of high-capacity public transport rail subsystems

##### Proposed implementation coordinators:

- RS Ministry of Construction, Transport and Infrastructure
- Secretariat for Public Transport
- Secretariat for Investments
- PUC Belgrade Metro and Train

**BG train development** - Design and implementation of three new BG TRAIN lines: Line 2 (Belgrade Center (Prokop) - Resnik): Length 11,4 km, Line 3 (Makiš - Rakovica - Karaburma): Length 13,7 km and Line 4 (New Belgrade - Surčin): Length 19,2 km

**Metro development** - Design and implementation of two METRO lines: Line 1: Železnik - Mirijevo, total length 21,3 km and Line 2: Railway station Zemun - Mirijevo, total length 19,2 km.



**Indicators:** Number of passengers carried in the system; total revenue of the public passenger transport system, produced efficiency of the system; economic efficiency; energetic efficiency; average operating speed; average transport speed; accessibility in space and time; ecological suitability of the urban transport system

*Line network development plan for high-capacity rail subsystems*

### 3. MAINTAIN THE HIGH PUBLIC TRANSPORT SYSTEM MODAL SHARE AND IMPROVE QUALITY OF SERVICE (min. 48%)

#### 3.3. Development of public transport subsystems on the rivers

##### Proposed implementation coordinators:

- *Secretariat for Public Transport*
- *Port Management Agency*
- *Directorate for Waterways - PlovPut*

The navigable potentials of the Sava and Danube rivers allow the establishment of all types of passenger lines, i.e. transit, intercity, suburban, urban and tourist-circular. Having in mind the characteristics of the flows of the Sava and the Danube, three basic corridors of city lines for passenger transport in the area of Belgrade stand out. Those are:

- **Corridor 1** - Western (Sava) corridor: Sava port or Branko's Bridge - Sajmište - Ada Ciganlija - Block 70 - Block 45 - Ostružnica - Umka - Obrenovac - Progar - Bojčinska forest
- **Corridor 2** - Northern (Danube) Corridor: Branko's Bridge - Great War Island - Zemun Quay - Gornji Zemun - Batajnica with Novi Banovci extension - Stari Banovci - Belegiš - Surduk - Slankamen
- **Corridor 3** - Eastern (Danube) corridor: Branko's bridge - Dorćol - Krnjača (Borča) - Karaburma - Višnjica - Veliki selski rit - Forkontumac - Pančevo - Vinča - Ritopek - Grocka

The general objective of this measure is to determine the possible locations, categories of voyages and types of representative vessels with which one can expect to perform certain modes of passenger transport on rivers. At all the above-mentioned places on the corridors, it is necessary to provide a local passenger port with defined waters, territories and connections with other subsystems of land passenger transport in Belgrade. Within this measure, it is necessary to design the timetables of passenger boats on each line using the methods of transport engineering. To define the timetable on city river lines, the following conditions need to be met:

- The line must serve all places open for passenger reception
- The number of boats and berths on each line should correspond to the distribution of passenger flows on the lines in accordance with the volume of transport requirements
- The time of departure of the boat from the initial berth, passage through the berths on the line and arrival at the final berth is determined in accordance with the requirements and needs of passengers and other external elements of functioning
- The speed of navigation of boats on each line should be harmonized with the category of the line

It is necessary to define the schedule of boats on the city river lines in relation to the time period of navigation (spring, summer and autumn), given the pronounced seasonal impact on passenger flows and the functioning of this subsystem. The calendar boundaries of these periods would be determined depending on local conditions. Also, it is necessary to perform full physical, tariff and logical integration with other public



**BG RIVER PUBLIC  
TRANSPORT**



transport subsystems and the necessary times to transfer to other modes of transport and boats on other urban river lines.

**Indicators:** Number of lines, length of lines, number of passengers for a certain navigation period, distance between docks, transport work, average daily traffic density on sections of the waterway, uneven transport by months of navigation, uneven transport by days during the week



#### 4. REDUCE PASSENGER CAR USE (20%)

##### 4.1. Development of e-mobility services (public transport and micromobility sectors)

**Proposed implementation coordinators:**

- *Secretariat for Transport*
- *Secretariat for Public Transport*
- *Secretariat for Investments*

Mobility systems are likely to be significantly different in the future from what they are today in most of the world. The passenger is at the heart of this evolution, so consumers will need to be open to adopting new technologies and services, especially in the area of sustainable and innovative transport. E-mobility is a set of services, i.e. types of transport, which primarily **involve the use of electricity as propulsion energy**. The implementation of this measure is primarily

reflected in the improvement of existing and implementation of new e-mobility services, which would contribute to progress in the field of sustainable and innovative transport. Improving the existing services means increasing the share of e-subsystems in the realized transport work in the city transport system - in the sector of public transport (**e-buses** in the public transport system, **e-cars in the taxi transport system**). The proposed measure should consider the development and implementation of new services, primarily through the development of **micro-mobility** (e-bikes, e-cargo bikes, e-rickshaws, e-scooters, segways, e-scooters, etc.), but also through development and implementation of special modes of transport (cable cars, escalators, etc.). The development of e-mobility





services within the urban environment, in addition to the above, implies the implementation and application of **autonomous vehicles** (driverless vehicle technology). The public and private sectors will have an equal role and responsibility for the successful implementation, application and development of all these e-mobility services. Involvement of the public sector primarily concerns the development of legislation and fiscal incentives, which removes the existing obstacles to the private sector in the development of certain types of e-mobility.

**Indicators:** Number of different types of e-mobility, number of users of e-mobility services, number of means of transport available to users, number of realized passenger\*kilometers with different types of e-mobility, participation of different types of e-mobility in modal share



## 4. REDUCE PASSENGER CAR USE (20%)

### 4.2.1. Car sharing

#### Proposed implementation coordinators:

- *Secretariat for Transport*
- *Secretariat for Public Transport*
- *Secretariat for Investments*

One of the main goals of SUMP is to reduce the total number of trips by passenger car. Car sharing does not reduce the number of trips but reduces the number of cars used to accomplish the same amount of passenger car trip. Car sharing is a subsystem of flexible public urban passenger transport available to users in space and time as a public or semi-public service, in which the user performs planning and optimization of the transport process in accordance with their own transport needs. For the realization of their transport needs, users have at their disposal a fleet of various construction and exploitation characteristics, which are used for individual trips, and the tariff and conditions of use are agreed with the operator before using the service. This service is mainly based on a membership (club) that does not require a special written agreement (contract) each time the user reserves and uses a vehicle. The company offering the shared car provides members with access to an extensive network of vehicles that are available to customers on a 24/7 basis at self-service locations and affordable tariffs, which include fuel, insurance and maintenance. Prices are in direct proportion to the intensity of service use and are lower than the cost of privately owned cars. In this way, the resident of the city shifts the focus from his own private car to a more rational approach - the use of a shared car.



**Indicators:** Improved mobility coefficient, reduced motorization rate



## 4. REDUCE PASSENGER CAR USE (20%)

### 4.2.2. Car pooling

#### Proposed implementation coordinators:

- Secretariat for Transport
- Ministry of Interior

Car pooling is a subsystem of flexible public transport available to a number of users in space and time as a semi-public service, in which one user (usually the owner of a private car) who is also a service provider plans and optimizes the transport process in agreement with other users, with the goal of realizing a shared ride. By joint use of a private car, a shared ride of several persons in a private car is realized, without the driver/service provider having a direct financial benefit for the transport service produced and performed. Private car sharing is based on the concept of cost sharing among participants (usually propulsion energy). Private car sharing users may pay a smaller (symbolic) amount to the service provider because they made a successful connection between users seeking the same type of service. The organization of this subsystem of flexible passenger transport works best if it is organized through online software to connect people looking for the same type of service. The advantages of using a shared private car are directly projected on the quality of life in cities, because on the one hand they reduce the use of individual passenger cars and creation of a complex traffic picture (especially congestion), and on the other hand affect lower occupancy of urban areas through the derived number of public parking lots.

Car pooling can be achieved through:

- promotional activities
- development of applications for users and
- providing benefits to vehicles with more than three passengers in the vehicle when using the road network in Belgrade

Promotional activities should be conducted as public campaigns for citizens of certain parts of the city (municipalities, local communities, settlements ...) or in large companies to encourage joint arrival to work in one vehicle. An application for car sharing should be made for the Belgrade area (following the example of applications that exist for intercity traffic (BlaBlaCar, etc.). The initiative should be promoted through social networks and the media. As a special incentive, form special lanes reserved for vehicles with more than three passengers on important traffic corridors (bridges, city highways) and equip them with control cameras.



**Indicators:** Number of rides achieved by car pool application, number of application users, average vehicle occupancy



## 4. REDUCE PASSENGER CAR USE (20%)

### 4.2.3. Development of multi-mobility services BIKE&RIDE

Proposed implementation coordinators:

- *Secretariat for Transport*
- *Secretariat for Public Transport*
- *Belgrade Land Development Public Agency*
- *Belgrade Metro and Train*
- *Railways of Serbia*

The BIKE&RIDE system entails two activities:

- Construction of parking for bicycles and scooters at stations or stops of the public transport system
- Possibility of bringing bicycles or scooters into the public transport vehicle

Parking for bicycles or scooters should be built in the immediate vicinity of a station or stop. In Belgrade, these are the stops of BG trains, the stations of the Serbian Railways and public transport stops, and also, in the future, stations of the metro system. The basis of the system is to pay for both parking and transportation with one ticket. Users of subscription tickets should have free parking as part of the transportation service. Parking management should be the responsibility of the Parking Service or the carrier. The Secretariat for Public Transport should be the coordinator of activities. Investing in parking construction should be done by Parking service or the carrier. It is necessary for this measure to be an integral part of the contract between the City of Belgrade and the carrier. It is recommended that the PARK & RIDE and BIKE & RIDE services be combined in the same space. When bringing in bicycles and scooters, it is necessary to create legal and technical possibilities for this activity. In terms of Legal conditions, it is necessary to change the regulations for the railway and public transport so that bringing bicycles and scooters into the vehicle is permitted. On the technical side, it is necessary to provide space in vehicles for storing bicycles or scooters. It is also necessary to check the leveling characteristics of the stops and stations so that they allow easy entry and exit of bicycles from the vehicle.

**Indicators:** Number of bicycle parking lots, number of vehicles equipped to accept bicycles



#### 4. REDUCE PASSENGER CAR USE (20%)

##### 4.3 Development of the MaaS concept -Mobility-as-a-Service

Proposed implementation coordinators:

- *Secretariat for Public Transport*
- *Secretariat for Transport*
- *Transport Engineering Companies*

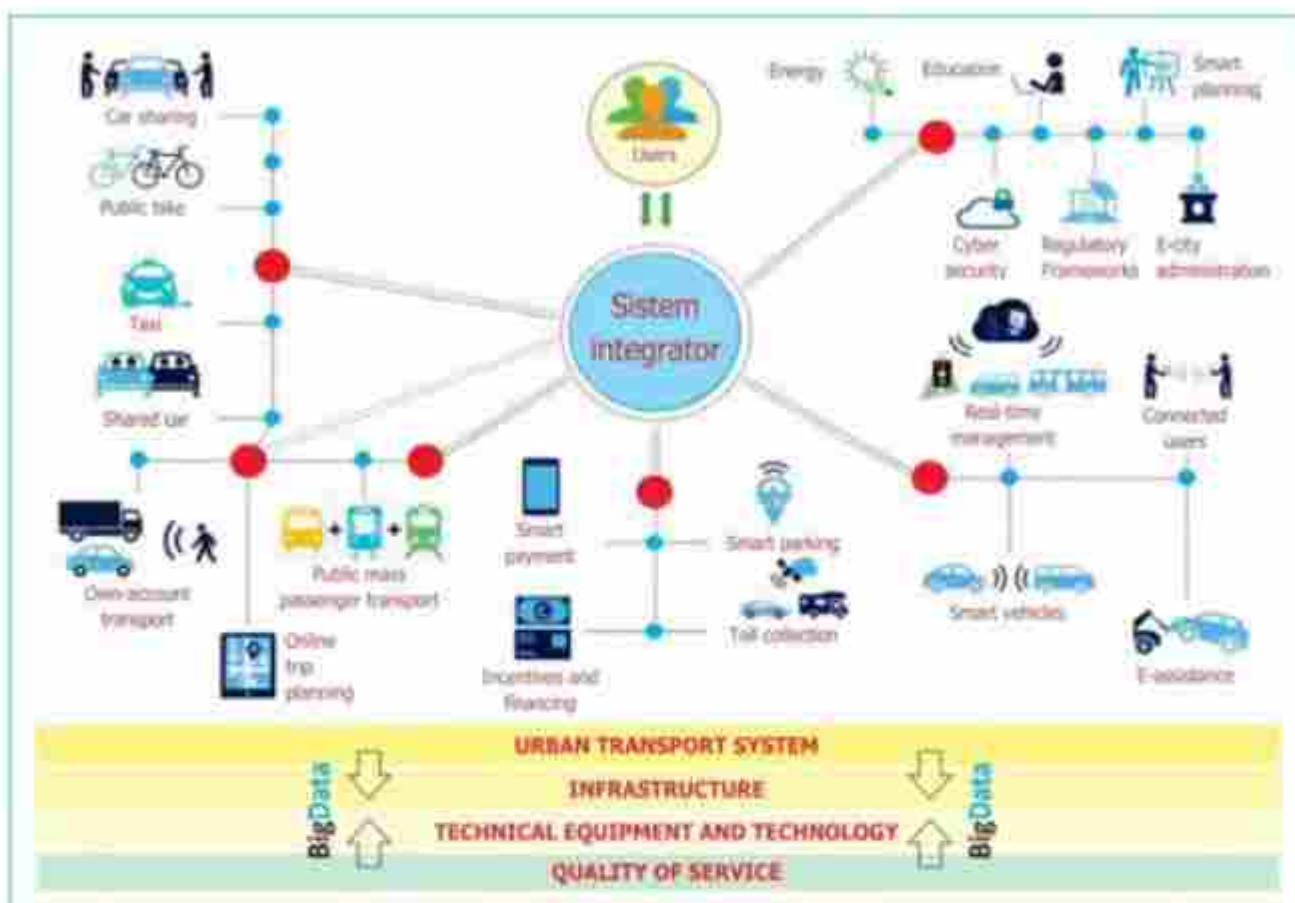
This measure envisages the development of the Mobility as a Service system (MaaS -Mobility-as-a-Service), as a new, innovative solution that would improve the efficiency of the transport system of the city of Belgrade. The goal of the system is for the user to pay for mobility services according to their transport needs, instead of buying the means for the realization of mobility (car, bicycle, motorcycle, etc.) Quality public mass passenger

transport is a necessary condition for the development of a sustainable MaaS system and therefore the coordinator of this measure is the Secretariat for Public Transport. It is necessary to carry out the following activities:

1. Digitization at all levels for key actors in mobility (the degree of digitization is different - for example, in the system of public transport there is already a system for managing the operation of vehicles and electronic billing system - BusPlus)
2. Development of a single city SMART card for all transport services
3. Development of infrastructure and interface for interconnection (networking) of key elements in the system (vehicle-vehicle, vehicle-environment, vehicle-user, user-environment)
4. Expansion of the spectrum of transport services through the development of services of the on-demand transport subsystem (Demand Responsive Transport) primarily in the areas of lower population density
5. Integration of all mobility actors through the development of system integrators
6. Development of integrated and flexible tariff systems (development of only one channel for payment of services with a minimum of payment operations)
7. Development of flexible service packages, according to the characteristics of transport needs of characteristic user groups
8. Development of BG - MaaS application

**Indicators:** Reduction of the share of passenger car trip in the total modal share, higher production efficiency of the transport system (in terms of work results and invested resources)





*MaaS scheme*



## 4. REDUCE PASSENGER CAR USE (20%)

### 4.4. Parking demand management

#### Proposed implementation coordinators:

- *Secretariat for Transport*
- *Belgrade Land Development Public Agency*
- *PUC Parking Service*
- *Secretariat for Public Transport*

It is generally established that measures related to parking policy are one of the most important factors out of all traffic management measures.

Parking management measures affect the choice of travel methods and thus the participation of cars in modal share. The measure related to the parking policy, with other defined measures, will be essential in achieving the goals related to accessibility and the environment. If there is a larger number of parking lots in the city center in relation to the demand, it cannot be expected that the improvement of public transport will result in

a change in modal share. As part of the above mentioned measure, guidelines for further development and improvement of the parking policy on the territory of the city of Belgrade are given. Some of the specific measures that are part of this measure and affect the development of parking policy and achieving the goals are:

- Control of locations with the highest demand - establish in known attractive zones, with the identification of new and potential zones of this type
- Change of tariff policy - improve in the price of parking is possible if 85% of the parking spaces are occupied during peak hours. Parking fees may influence drivers to relocate their activities to other zones, however, this will be informed by the price of the fee as well as the level of attractiveness of neighboring zones, so it is estimated that it has little negative impact on economic progress
- Parking time limit of 3 to 4 hours in business/commercial zones to avoid parking of employees in those zones. Implement this measure in addition to measures related to public transport, in order to ensure that employees in these zones have the opportunity to use another type of transport
- Change the fee system so that parking inside garages is cheaper than on-street parking. In this way, users will be encouraged to use garages. Regulate the offer of monthly and annual parking tickets in garages, i.e. time restrictions in accordance with e.g. working hours of the user. It is known that restricting parking until 5 pm discourages users/employees in the zone from parking vehicles in the garage
- Clearly and publicly present to the users the financial plan for the use of income generated from vehicle parking fees in order to improve the acceptability of collection
- Define, i.e. standardize maximum, rather than the minimum parking standards for the number of parking lots required for the construction of new buildings (or do not allow new parking spaces with new development, e.g. in areas with good public transport)
- Enable parking management through platforms that will give users clear and accurate information on the



availability of parking spaces in the zones, as well as other parking-related details

- Vehicle parking management is a process that occurs in the process of urban planning and throughout the construction process requires monitoring and inspection to there is an adequate number of parking spaces is built for each newly constructed facility, in accordance with applicable norms. The most significant activities here are the provision of construction and use permits for facilities

Regulation and management of street parking:

- Prohibition and regulation of violations of the parking ban in the intersection zone in order to ensure visibility, safety and access to pedestrian crossings
- Restriction of parking on main roads during peak hours in order to ensure unhindered flow of vehicles
- Regulation of vehicle parking along narrow two-way streets by marking parking spaces on one side of the road
- Parking time limit depending on the needs of the user and the space in which it is located
- Regulate parking in certain areas to provide space so that commercial vehicles can be loaded and unloaded at service shops and offices along the street
- Use parking as a means of calming traffic: parked cars can help slow down traffic - however, careful implementation is needed in terms of traffic safety
- Parking for bicycles - during the construction of new residential and commercial buildings, provide parking spaces for bicycles

Garage parking management - Objectives that include relocate vehicles from public areas, reducing congestion due to arising from the search for parking spaces, and an improve in surfaces intended for pedestrians require the construction of public parking garages which carry a significant construction cost. The key consideration related to the construction of new parking garages is their cost-effectiveness, i.e. the profit that will be realized by building them. In order for a parking garage to make a profit, it is difficult to define a parking price that would be lower than the price of street parking. Therefore, in order to be used, parking garages should be subsidized - and the local government can decide through analysis whether it is economically and financially more profitable to subsidize public transport and the park and ride system. In addition, from a policy point of view, providing new off-street parking lots in central parts of cities can improve congestion problems, as new parking lots can encourage more people to move in a passenger vehicle. This means that it makes sense to consider whether it should be replaced by parking outside the central city zone, with good connections for public transport - the park and ride system. Some recommendations for off-street public parking are as follows:

- Analyze the need for parking garages in the central city zone and whether garages on the outskirts of the city can be provided instead that will function in the park and ride system

If decisions are made to construct garages in the central city zone or on its perimeter, it is necessary to determine:

- Attractiveness of the zone, i.e. perform a multi-criteria analysis of the location
- If a private operator manages parking garages, ensure that the city administration can influence the price structure
- Set lower prices per hour for shorter (up to 3-4 hours) and significantly higher prices per hour for longer stays, in order to improve parking turnover and to discourage employees from parking

- Set prices lower than the price of parking on the street. If parking on the street near the new off-street parking is very cheap or free with no time restrictions, almost no one will use the new parking
- It is necessary that the traffic at the entrances and exits of the parking garage does not affect the surrounding traffic, and especially public transport
- By putting the garage into operation, it is necessary to remove street parking in order to prevent the search for free street parking lots, which causes congestion

**Indicators:** Number of constructed parking lots on public and other construction land, number of constructed garage spaces, number of parking lots on other construction land per apartment, realized turnover of parking in public parking lots

## 5. PROMOTE SOCIAL JUSTICE AND EQUALITY, PROVIDE AVAILABILITY AND ACCESSIBILITY FOR ALL CITIZENS AND IMPROVE THE LEVEL OF SAFETY OF TRAFFIC PARTICIPANTS AND PUBLIC SPACES

### 5.1. Public space safety

#### Proposed implementation coordinators:

- *Secretariat for Transport*
- *Ministry of Interior*
- *With the support of PUC Public Lighting, PE Roads of Belgrade*

In order to be optimally used, public spaces should be primarily safe to use, but also well-designed, equipped, comfortable and pleasant for the groups of users for whom they are intended. Increasing the attractiveness of public spaces for their legitimate users reduces their attractiveness to criminal groups, which contributes to improved security. Another aspect of security refers to convenient and easily accessible approaches to public areas, as well as the space being arranged in such a way that it is safe for use by all groups of users.

Elements that affect security in public space and that need to be considered and improved:

- safe and convenient access for all groups of citizens (access ramps, removal of barriers, fencing off of some parts as needed ...)
- proximity to the road (distance from traffic noise and motor traffic)
- clear demarcation of public and private space
- visibility of space (concept of defensible space)
- connecting or separating different groups of users depending on the needs (children, space for animals and their owners, the elderly, athletes, youth ...)
- quality lighting and the possibility of introducing video surveillance
- more frequent patrols of law enforcement agencies in order to avoid gathering of problematic groups...

**Indicators:** Number of injuries and accidents in a public area, number of reported robberies







## 5. PROMOTE SOCIAL JUSTICE AND EQUALITY, PROVIDE AVAILABILITY AND ACCESSIBILITY FOR ALL CITIZENS AND IMPROVE THE LEVEL OF SAFETY OF TRAFFIC PARTICIPANTS AND PUBLIC SPACES

### 5.2. Improving safety and security of pedestrians and other unmotorised traffic participants

#### Proposed implementation coordinators:

- Secretariat for Transport
- Ministry of Interior
- Road Traffic Safety Agency

This measure should be preceded by a sequence of analyses which will determine the current state of pedestrian infrastructure on the territory of the city of Belgrade and the state of user safety. After the analyses proposed in this measure are completed, it will be necessary to define concrete measures that will improve the safety and availability for users. Some of the measures that can be proposed that would contribute to the above are:

- construction of footpaths
- construction of recessed curbs in the zone of pedestrian crossings
- marking pedestrian crossings
- installation of public lighting along pedestrian areas (parks, inside blocks, underground passages, etc.)
- construction of "safe routes to school"
- organizing school buses
- speed regulation in the school zone
- police controls

**Indicators:** Decrease in the number of accidents involving pedestrians, improve in the share of pedestrian trips in the modal share on the territory of the city of Belgrade.





## 5. PROMOTE SOCIAL JUSTICE AND EQUALITY, PROVIDE AVAILABILITY AND ACCESSIBILITY FOR ALL CITIZENS AND IMPROVE THE LEVEL OF SAFETY OF TRAFFIC PARTICIPANTS AND PUBLIC SPACES

### 5.3. Adjusting existing infrastructure and improving accessibility for vulnerable user categories

#### Proposed implementation coordinators:

- Secretariat for Transport
- PE Roads of Belgrade
- Other stakeholders

Activities within this measure must be aimed at the realization of trip areas that are comfortable, safe and equally available and accessible to ALL users. In practice, the item "equally accessible and accessible to ALL users" is usually neglected, most often as a result of insufficient knowledge of the different needs of individual groups, or simply due to neglect of the needs of vulnerable categories of users. Although some progress has been made in Belgrade in improving accessibility for vulnerable groups of participants, primarily in the central city area, improvements have unfortunately not been consistently

and continuously implemented throughout the city. This measure envisages the overall and continuous improvement of the existing infrastructure intended for vulnerable categories of users. Provision of additional access to the administrative centers of municipalities and other official state institutions (hospitals, post offices, etc.), is planned, through the construction of sloping ramps, fences with handrails and the implementation of elevators. In particular, the improvement of traffic infrastructure at pedestrian crossings, the use of recessed curbs, the arrangement of sidewalks, the use of tactile signs and the improvement of traffic signals are envisaged. Additional attention is focused on traffic lights and the implementation of new traffic lights with sound signals, but also on the provision and arrangement of parking lots in street and off-street parking lots intended for people with reduced mobility.



**Indicators:** Improve/decrease in the percentage of participation of vulnerable categories in the total number of pedestrian trips, constant checking and monitoring of the state of infrastructure and signalization, safety analysis of vulnerable categories





## 5. PROMOTE SOCIAL JUSTICE AND EQUALITY, PROVIDE AVAILABILITY AND ACCESSIBILITY FOR ALL CITIZENS AND IMPROVE THE LEVEL OF SAFETY OF TRAFFIC PARTICIPANTS AND PUBLIC SPACES

### 5.4. Adjusting the public transport system according to the needs of vulnerable groups

#### Proposed implementation coordinators:

- *Secretariat for Transport*
- *Secretariat for Public Transport (GSP and other operators)*
- *Other stakeholders*

This measure envisages reconstruction or adjustment of transport terminals and stops to the needs of vulnerable groups of users through: improvement of information and guidance systems for users, construction of ramps, slopes, protective and auxiliary fences, implementation of elevators and escalators, etc. Bearing in mind that the City of Belgrade has already started with the improvement of the vehicle fleet in the public transport sector, this measure envisages additional expansion, i.e. continuation of vehicle fleet rejuvenation. This includes the purchase of low-floor vehicles, equipped with ramps for people with reduced mobility and a specially arranged space inside the vehicle intended for these users. In addition, the vehicles of the existing vehicle fleet, which do not currently meet the above-mentioned needs of vulnerable groups, are to be modified, the departures of vehicles on certain lines to be adjusted, in accordance with the given requirements. Improving, i.e. adapting the public transport system to vulnerable groups of users, helps meet their basic needs, improves the quality of life of all participants and raises the level of service and the quality of public transport.

#### Indicators:

Improve/decrease in the percentage of participation of vulnerable categories in public transport; level of satisfaction with the service provided



## 5. PROMOTE SOCIAL JUSTICE AND EQUALITY, PROVIDE AVAILABILITY AND ACCESSIBILITY FOR ALL CITIZENS AND IMPROVE THE LEVEL OF SAFETY OF TRAFFIC PARTICIPANTS AND PUBLIC SPACES

### 5.5. Implementation of vulnerable group integration programs

#### Proposed implementation coordinators:

- *Commissioner for the Protection of Equality*
- *Secretariat for Social Protection*
- *Secretariat for Public Transport*
- *Secretariat for Transport*

When realizing their needs for trip and making decisions regarding trip, certain groups encounter a number of obstacles. Vulnerable groups include, but are not limited to: Low income groups; Ethnic minorities; People of different racial backgrounds; People with pets; People that do not speak Serbian; People with small children; Senior citizens and people suffering from illness. Each of these groups has very specific problems when realizing their trip needs, but the result is invariably a reduced possibility of choice and limitation to only one mode of transport. People with poor financial status do not have access to all

modes of transport due to lack of funds. Through social assistance measures, it is possible to provide free tickets for public transport, free use of public bicycles as well as free provision of bicycles by social services. Ethnic and racial discrimination is not only directly related to the needs of trip, but it is also a part of it. People of different ethnic and racial backgrounds often encounter inappropriate behavior by taxi drivers, public transport drivers and many others. These persons are often denied the provision of transport services altogether. All forms of ethnic and racial discrimination should be sanctioned, including the refusal to provide transport services as a result of discrimination. Another group that is often denied transport services, especially in the system of public transport and taxis, are people with pets. It is necessary to legally regulate the mode of transport of pets in the system of public transport and taxis and at the same time to sanction non-compliance with regulations so that this group of users can switch from using passenger cars to the system of public transport and their mobility be facilitated. Groups of users who do not speak Serbian (mostly tourists) find it difficult to move around the city due to the insufficient amount of information provided in other languages. In recent years, the information available to this group has been increasing, but it is necessary to make additional efforts to present public transport information in other, globalized, languages in addition to Serbian. At a minimum, it is necessary to create applications for mobile devices that will be displayed in several world languages and provide all the information about public transport lines, departures, as well as basic information about the main centers of attraction in the city, and how to get there.

**Indicators:** Number of discrimination complaints, number of reactions and complaint resolutions (it should be borne in mind that the implementation of measures may improve the number of complaints, due to the creation of trust in the system, after which a decline can be expected)





## 5. PROMOTE SOCIAL JUSTICE AND EQUALITY, PROVIDE AVAILABILITY AND ACCESSIBILITY FOR ALL CITIZENS AND IMPROVE THE LEVEL OF SAFETY OF TRAFFIC PARTICIPANTS AND PUBLIC SPACES

### 5.6. Arrangement and management of traffic areas in hospital (health) complexes

#### Proposed implementation coordinators:

- Secretariat for Transport
- Belgrade Land Development Public Agency
- Secretariat for Public Transport
- Ministry of Health

The existing state of availability, accessibility and parking facilities within hospital (healthcare) complexes is unacceptable from the aspect of user, i.e. patient needs since it does not fairly and efficiently cater to the needs of citizens in the process of meeting complex medical needs. The reconstruction of traffic areas in hospital (healthcare) complexes within the territory of the city, primarily within the Clinical Center of Serbia as the largest and functionally most complex, will provide a more

efficient, safer, and more attractive traffic infrastructure for the access and trip of people with health problems, for whom this is the primary reason for visiting the area. The main goal of every city road is multi-functionality, which means providing access to any facility regardless of the physical ability of the visitor, rather than merely allowing access to vehicles. Given the category of visitors to this type of facility, it is necessary to reconstruct traffic areas in such a way that each facility has the following:

- pedestrian access without physical barriers
- car access
- public transport within 200m walking distance (electric minibuses, "Sparrow" service, etc.)

In hospital (healthcare) complexes on the territory of the city, it is necessary to provide and regulate:

- Vehicle parking for zone visitors, i.e. patients, billed without a time limit within traffic surfaces namely: on-street, parking lots, and parking garages
- Discourage employee parking though billing without a time limit
- Provide garage parking for a certain number of employees, billed without a time limit.

City zones which need to be considered in the urban planning study are as follows:

- The zone of the Clinical Center of Serbia, bounded by the streets: Bul. Oslobođenja, Tiršova, Deligradska, Pasterova, Resavska, Višegradska, Kneza Miloša, Bul. Franše d'Eperea
- Clinical Hospital Centers: Zvezdara, Dr Dragiša Mišović, Zemun, Bežanijska kosa
- Community health centers
- Clinics and institutes in the following streets: Sokobanjska, Nemanjina, Kraljice Marije, Bul. Vojvode Putnika, etc.

**Indicators:** Number of parking lots available, number of transported passengers, length/surface of sidewalks, pedestrian paths providing unobstructed access





## 6. CONSERVATION AND IMPROVEMENT OF NATURAL RESOURCES

### 6.1. Development of green transport corridors through existing urban and suburban spaces

#### Proposed implementation coordinators:

- *Secretariat for Transport*
- *Belgrade Land Development Public Agency*
- *Public Utility Company Greenery Belgrade*

The creation of green transport corridors through existing urban and suburban areas ("urban tissue"), connecting existing green areas, woods, and protected natural assets. A green transport corridor is a route/road for public transport, (preferably rail), or a bicycle or pedestrian path, surrounded by green areas: tree-lines, hedges, lawns.

This kind of corridor can be integrated with coastal fortifications, or other landscaped areas for flood protection. The greenery along the corridor alleviates the weather extremes to which passengers are exposed (heat, wind), and at the same time contributes to the functional networking of Belgrade's habitats. Route proposal: a green transport corridor that connects Ada Ciganlija and Avala, across Rakovica, along the basin of the Topčiderska river.

**Indicators:** Road length of the green transport corridor type



## 6. CONSERVATION AND IMPROVEMENT OF NATURAL RESOURCES

### 6. 2. Development of walking and cycling (combined – rollerblades, scooters) paths within existing green spaces, parks, woods, and protected areas:

#### Proposed implementation coordinators

- Secretariat for Transport
- Belgrade Land Development Public Agency
- Public Utility Company Greenery Belgrade

Creation of bicycle and pedestrian (combined – rollerblades, scooters) paths within existing green areas, parks, woods, and protected areas. Installation of signposts and info-boards, appropriate lighting, rest areas, benches, waste baskets. Preference should be given to modernizing existing trails. New trails should be implemented to encourage multimodal transport and the use of public transport (connection to bicycle parking lots, electric scooter hiring/charging stations, public transport stations), while preserving habitat diversity and landscape features (minimal tree felling and preservation of vegetation).

#### Suggested locations:

- Topčider (along Topčiderska river, connecting Ada Ciganlija and the existing bicycle path, via the Hippodrome towards Rakovica).
- Košutnjak (Pionirska, Čede Minderovića and Majora Dobrosava Tešića)
- the Topčider – Hajd park – Belgrade Center railway station connection (along Topčiderska, or Bulevar Vojvode Putnika, the incline from Topčiderska Česma to the corner of Milla Milunovica presents a difficulty, and tracing a new path through the woods is an option)
- Volgina street (from Milana Rakića to Marijane Gregoran)
- Zvezdara forest (connecting the "1300 kaplara" primary school, the Secondary Medical School, the Science and Technology park, "Mihajlo Putin" Institute, Zvezdani gaj, Astronomical observatory, descending to Nikole Doksa street)
- Resnik/Avala (Topčiderska river – Pariguz lake – Pariguz stream – Jaroslava Černog street – Dolska street – Avalska street)

**Indicators:** Length of landscaped paths within existing green areas





## 6. CONSERVATION AND IMPROVEMENT OF NATURAL RESOURCES

### 6.3. Promotion of Belgrade biodiversity in cooperation with civil society organisations - popularisation of their existing activities and encouragement of new initiatives

#### Proposed implementation coordinators:

- *Secretariat for Transport*
- *Belgrade Land Development Public Agency*
- *Public Utility Company Greenery Belgrade*

Promoting biodiversity in Belgrade in cooperation with civil society organisations – popularization of existing activities and encouragement of new initiatives. The promotion effort includes, not only informing the public but also the active engagement of interested citizens. Activities combining daily trips with recreational outdoor time, in nature, will be supported. For example, the promotion of exceptionally rich bird diversity in Belgrade can be realized by setting up information boards, making and distributing posters and brochures, as well as involving citizens in regular bird counting (census) campaigns, or supporting mapping of bird sightings. Landscaping and afforestation campaigns can be used to promote indigenous plant species and varieties. An open invitation to civil society organizations for activities to promote Belgrade's biodiversity and walking.



Within the call, funds would be approved for: 1) identification of hiking routes interesting from the point of view of Belgrade biodiversity, 2) development of info boards along the routes, 3) development of a printed route map, 4) development of an illustrated, printed guide, 5) development of a website, its regular updating and promotion on social networks, 6) (optional) development of an application for mobile phones with routes, illustrated guide and the possibility of citizen engagement - mapping of observed plants/animals/fungi, and/or habitats, 7) (optional) creation of printed checklists of species that can be observed in Belgrade, 8) (optional) Support - co-financing of promotional and educational events (events



such as "Bat Night" or "EuroBirdwatch"). The goal of the campaign: to promote pedestrian trips and recognize biodiversity as an asset for Belgrade, support and deepen cooperation with civil society organizations. The description of the measure states the connection with the promotion of sustainable mobility with a focus on pedestrian trips. This measure was highlighted as one of the quick measures, due to the existing administrative and financial capacity to implement it, even within the regular activities of the City Administration. Raising awareness of the richness of Belgrade's biodiversity will have a stimulating effect on citizens who will be able to choose another mode of transport instead of the personal passenger car once conditions are favorable. Also, programs that enable citizens to be actively involved in the care of biodiversity (identification, counting/censuses, habitat mapping, trail mapping, etc.) will simultaneously open to citizens new, hitherto unrecognized roads and modes of transport.

**Indicators:** The number of mapped locations

## 6. CONSERVATION AND IMPROVEMENT OF NATURAL RESOURCES

### 6. 4. Rehabilitation of unregulated landfills, urban wastelands and other unregulated habitats

**Proposed implementation coordinators:**

- *Secretariat for Utilities and Housing Services*
- *PUC "City Sanitation"*

Unregulated landfills, urban wastelands and other unregulated habitats: prevent the disposal of waste, primarily construction waste, along roads and on green areas. Make bicycle, pedestrian and public transport routes inaccessible to passenger and freight vehicles with barriers, poles, canals and other physical obstacles. Use the resources and powers that Belgrade has at its disposal (communal police, video surveillance, inspections) to punish and discourage the unloading of waste outside regulated landfills. Promote existing solutions and utilities regarding waste disposal.

Stimulate the owners and users of undeveloped plots to prevent the growth of invasive and allergenic species and pests. Unregulated landfills, urban wastelands and other ruderal habitats are often situated along, or in the immediate vicinity of roads or other corridors through which people move, or would move, if the road was perceived as safe and attractive. Weeds, including invasive and allergenic species, are dominant in such disturbed habitats. These habitats also attract pests and ownerless dogs, which is an objective and perceived problem in the use of transport modes promoted by SUMP. The goal is to ensure that roads, access to public transport stops, existing and potential pedestrian/bicycle paths are free of waste and well-maintained so that residents find them attractive for trips, instead of repulsive as is currently the case.

**Indicators:** The number of reconstructed locations



## 7. REDUCTION OF HARMFUL EMISSIONS AND ENERGY CONSUMPTION

### 7.1. Energy efficient solutions for public utility traffic (electric vehicles, LPG, CNG, etc.)

#### Proposed implementation coordinators:

- Secretariat for utilities
- PUC "City Sanitation"

Support for the transition to new technologies and cleaner fuels (electric vehicles, liquefied petroleum gas - LPG, compressed natural gas - CNG, etc.) is one of the main ways in which decision makers promote sustainability and affect carbon dioxide emissions. At the local level, pricing and management programs can encourage the use of low-emission or low-fuel vehicles. Low-carbon vehicles can play an important role in the overall urban transport system. At the same time, it is important to improve the fuel efficiency of existing utility vehicles. Rebuilding the utility fleet and introducing energy-efficient vehicles into the system would greatly affect the city's carbon dioxide emissions.

A special study document should define the following:

- Phases for the replacement of the existing utility fleet, for each utility service
- Criteria for vehicle selection (types of motor fuel, vehicle capacity, method of maintenance, achieved savings in harmful gas emissions)
- Determining adequate types of low-carbon vehicles depending on the area of implementation (pedestrian zones, urban centers, municipal areas, regional connections)

**Indicators:** Number of actually replaced vehicles in relation to the number of proposed vehicles to replace over a certain period of time; reduction of carbon dioxide emissions caused by the transition to more energy-efficient vehicles; level of satisfaction with the service for different categories of users





## 7. REDUCTION OF HARMFUL EMISSIONS AND ENERGY CONSUMPTION

### 7.2. Control of emissions of pollutants and noise from motor vehicles

#### Proposed implementation coordinators:

- Road Traffic Safety Agency
- Communal Police
- Ministry of Interior

Strict roadworthiness inspections of public transport vehicles, including control of pollutant emissions. Define the operator's obligation to regularly report the measured emissions of its vehicles to the City. Carry out indicative measurements and send vehicles (passenger, freight) for extraordinary roadworthiness inspections, if they exceed the legally prescribed emissions of pollutants and noise, either within the jurisdiction of the communal police, or in cooperation with the traffic police. Carry out noise control of motorcycles.

**Indicators:** number of vehicles sent for extraordinary roadworthiness inspection.



## 7. REDUCTION OF HARMFUL EMISSIONS AND ENERGY CONSUMPTION

### 7.3. Stimulation of electric car use (LPG, CNG, etc.) for the needs of taxi transport and "ride share", by equipping taxi stations with chargers for electric cars and forming stations for the parking and charging of "ride share" vehicles.

#### Proposed implementation coordinators:

- Secretariat for Transport
- Belgrade Land Development Public Agency
- Ministry of Finance - Tax Administration
- Secretariat for Investments
- Secretariat for Environmental Protection
- Secretariat for Public Transport

Stimulate the use of electric cars (as well as vehicles powered by liquefied petroleum gas – LP), Compressed Natural Gas – CNG, for use in taxi transport by equipping taxi stops with stations for charging electric cars, i.e. increasing the number of pumping stations offering liquefied petroleum gas (LPG), compressed natural gas (CNG), etc. Introduce "ride share" systems exclusively for vehicles with zero local emissions: electric vehicles or vehicles propelled by muscle strength. With the aim of promoting multimodality, when introducing the "ride share" system, prohibit parking vehicles in public areas outside the locations dedicated for that purpose (parking and charging centers). Locations for parking and charging of "ride share" vehicles (cars, scooters...) should be tied to key locations in the existing transport system. Vehicles left outside the dedicated locations should be treated like improperly parked or abandoned vehicles. This involves equipping existing and potentially forming new stops,





which can be accompanied by a media campaign. A proposal: equipping existing taxi stops with charging stations for electric taxi vehicles. Locations: "Nikola Tesla" airport, Zemun (Nikole Tesle street), New Belgrade (Fontana), New Belgrade (Ušće), Stari grad (Makedonska), Stari grad (Uzun Mirkova), Vračar (Slavija), Vračar (Mačvanska), Zvezdara (Vuk monument), Savski venac (Pasterova). This measure primarily applies to equipping the existing city infrastructure (public areas intended for taxi stops), with the aim of utilizing electric cars in shared use mode – an individual taxi vehicle is in use for a far greater number of hours and serves a far greater number of passengers than a personal car. Introducing "ride share" cars is similarly motivated: a smaller number of vehicles in continuous operation, only driven by the users themselves. Taxi stops and the future "ride share" system would compete with personal car owners for public space – occupied parking spots. Proactive action by the City Administration can significantly influence the selection of vehicles in replacing the taxi fleet, as well as introduction of the new fleet when the "ride share" service is established. One of these proactive actions would be dedication of certain public spaces for stops/charging stations, and equipping these spaces with electric car chargers. These actions are complementary with other measures to promote electromobility.

**Indicators:** The number of registered vehicles (powered by: electric, LPG, CNG, etc.), the number of stops with electric chargers, the number of stops for "ride share" vehicles



## 8. INCREASING THE ATTRACTIVENESS AND QUALITY OF THE URBAN ENVIRONMENT

### 8.1. Developing a network of meeting points for people, connected by clear and transparent connections (line corridors, urban pockets)

#### Proposed implementation coordinators:

- *Belgrade Land Development Public Agency*
- *Secretariat for Transport*
- *Secretariat for Urban Planning and Construction*

This measure pertains to the networking of public spaces in order to enhance their usage and raise their quality. Connecting public spaces and forming unique functional units and sections encourages the creation of uninterrupted pedestrian and bicycle paths. Linear public spaces, unlike concentrated ones, promote the creation of connections and represent the axes of urban identity that connect various important points characteristic of the identity of individual parts of the urban fabric.

Interventions comprising this measure concretely involve the following:

1. Strengthening connections between attractive public spaces separated by roads (greater and smaller Tašmajdan, Kalemegdan and Knez Mihajlova street, the lower town and the river banks, green areas by the Residence of Prince Miloš, etc.)
  - expansion of sidewalks in public area zones
  - longer green light duration for pedestrians when crossing between two public spaces
  - the slowing of car traffic along the perimeter of public spaces
2. Formation of linear parks
  - activation of abandoned railways, etc. infrastructure corridors in the urban fabric (river-side railway and other sections in derelict industrial zones) – place making/strengthening connections between highly frequented public spaces within walking distance of each other – e.g. recreation centers, parks, attractive public facilities, historical, trade, and tourist destinations, markets, squares, cultural and educational institutions etc.
  - introduction of bicycle paths
  - formation of green corridors
  - providing constant passability and sidewalk extension
3. formation of pedestrian-bicycle recreational-tourist routes that connect attractive public spaces and facilities (linear or circular routes) in municipalities that would be included in tourist guides and be adequately marked with signposts and equipped with the necessary urban furniture with rest areas.

**Indicators:** Number of daily visitors, price-improve for land in the area, repurposing of surrounding facilities, etc.





## 8. INCREASING THE ATTRACTIVENESS AND QUALITY OF THE URBAN ENVIRONMENT

### 8.2. Creating, equipping, maintaining and managing public spaces to make them attractive and safe to use

#### Proposed implementation coordinators:

- Urban municipalities
- Secretariat for transport
- (with the support of PUC Greenery Belgrade, Ministry of Interior, Public Lighting Utility Company, PUC City Sanitation, PE Roads of Belgrade,...)

In order to be optimally used, public spaces should be primarily safe to use, but also well-designed, equipped, comfortable and pleasant for the groups of users for whom they are intended. The quality of a space comes from natural potentials (related to the morphology of the terrain, the proximity of water or forest), created potentials (represents the built environment) and position in the city network.

In addition, the quality of the space can be influenced by its arrangement and equipment. In addition to the basic infrastructural equipment and access solutions, public spaces can be further enriched with landscaping, different types of lighting, recognizable ambience design, benchmarks for easier orientation in space, park furniture, etc. When arranging public spaces, one should take into account the specific needs of users of different age groups of both sexes, their interests and requirements. Viewed from this aspect, the current state of public spaces in the city is uneven. In recent years, the reconstruction of many public spaces has been initiated, primarily in the central city fabric, as well as the arrangement of certain micro locations outside the center – mostly the city's pedestrian zone, central city parks and children's playgrounds in the New Belgrade blocks.

Interventions are reduced to the one-time reconstruction and equipping, and there is inconsistency in the subsequent maintenance and safekeeping of public property, which over time calls into question their safety and attractiveness. This measure entails the synchronized work of various city services, which, in addition to reconstruction and equipping, also implies later maintenance during use and conscientious management. High standards of maintenance encourage the active use of space. Increasing the attractiveness of public spaces for their legal users reduces its attractiveness to criminal groups, which contributes to improved safety. Elements that affect the attractiveness of public spaces and which should be considered and improved: specific facilities creating the character of the public space, hygiene level, equipment with urban furniture and regular replacement of damaged pieces, good reachability, strong connections with other public facilities, pedestrian, and bicycle corridors, the position of public transport, improving the quality of facilities in the area, landscaping quality, the formation of a flexible space (the possibility of use for different contents and types of gatherings), etc. Elements that affect safety in public spaces and that need to be considered and improved: safe and convenient access for all groups of citizens (access ramps, removal of barriers, fencing off some parts as needed ...), proximity to the road (distancing from traffic noise and motor traffic), clear demarcation of public and private space, visibility of space (concept of defensible space), connecting or separating different groups of users depending on needs (children, space for animals and their owners, the





elderly, athletes, youth ...), quality lighting and the possibility of introducing video surveillance, more frequent patrols by law enforcement agencies to avoid gathering of problem groups, etc.

**Indicators:** Attendance - number of users during the day, number of injuries and accidents in public places, number of reported robberies, number of cultural/sports events held during the year



## 8. INCREASING THE ATTRACTIVENESS AND QUALITY OF THE URBAN ENVIRONMENT

### 8.4. Remove vehicle parking from public areas

#### Proposed implementation coordinators:

- Secretariat for Transport
- Belgrade Land Development Public Agency
- Urban Municipalities
- PUC Parking Service

This measure implies the abolition of street parking in the inner city. The abolition of parking lots requires the construction of parking garages and parking lots on other construction land that will meet the requirements for vehicle parking in accordance with the existing motorization rate, as well as the anticipated motorization rate for the coming period. A significant amount of vehicle parking capacity can be provided by revising and

redefining vacant areas within existing apartment blocks. This can be regulated through the revision of urban documentation in apartment blocks in situations where legal and property relationships have not been resolved, or technical documentation in situations where land ownership has been resolved. In a large number of open apartment blocks, the deficit in vehicle parking capacities has caused the devastation of green areas. This situation results in the degradation of space, leaving the impression of neglect and disorder, since large areas are neither adapted for vehicle parking nor are they green areas. The aforementioned measure also implies adopting legal regulations which will require the Investor to provide a sufficient number of parking lots within the (residential and/or business) facility for users of the facility and



the associated plot. Except in the construction phase, during the use permit phase it is necessary to control the use of the space constructed, i.e. it is necessary to ensure the parking space is used exclusively for this purpose. This measure would free up pedestrian areas where vehicle users park their vehicles due to the lack of parking lots. In addition to the construction of parking lots/garages, it is necessary to sanction and prevent improper stopping and parking in public areas (by using equipment, bollards, etc.).

**Indicators:** Percentage of occupied road and pedestrian areas



## 8. INCREASING THE ATTRACTIVENESS AND QUALITY OF THE URBAN ENVIRONMENT

### 8.5. Development and improvement of city logistics

**Proposed implementation coordinators:**

- *Secretariat for Transport*
- *Communal Police*

City logistics are necessary for the efficient functioning of cities. This includes modes of transportation, handling and storage of goods, inventory management, waste, as well as home delivery services. The European Commission has significantly contributed to the development of knowledge, expertise and the application of the concepts of sustainable urban logistics. The success of city logistics initiatives also depends on the impact on logistics costs, feasibility and practical applicability. In general, city logistics initiatives can be divided into those that do not require significant changes to the existing context of the urban environment and logistics and those that do. The activities that change the existing context of the urban environment are described in more detail below. These activities are more complex, mostly requiring significant financial investments, construction of infrastructure systems and involvement of various participants. These include activities that involve change or construction of infrastructure systems and activities that involve change or reorganization of logistics activities. Activities related to infrastructure - this category of activities includes changes to existing and development of new infrastructure systems and elements that enable the implementation of logistics





activities in the city, with the aim of making them more sustainable. Two types of initiatives in this category represent the basis of characteristic city logistics concepts (logistics centers and underground logistics systems).

- Improving road infrastructure
- Cargo unit standardization
- Cargo bicycle service in the central zone
- Activities related to the reorganization of logistics activities; transport exchanges and intermodal transport

**Indicators:** Number of transshipment terminals; number of transshipment points/stations; quantity of cargo units; number of hours in time unit (month, year)



## 9. BALANCED DEVELOPMENT OF ALL BELGRADE MUNICIPALITIES, IMPROVEMENT OF THEIR MUTUAL AND WIDER, REGIONAL CONNECTIONS

### 9.1. Planning of new facilities and their homogenous integration in all municipalities

#### Proposed implementation coordinators:

- *City Administration*
- *Belgrade Land Development Public Agency*
- *Secretariat for Urban Planning and Construction*

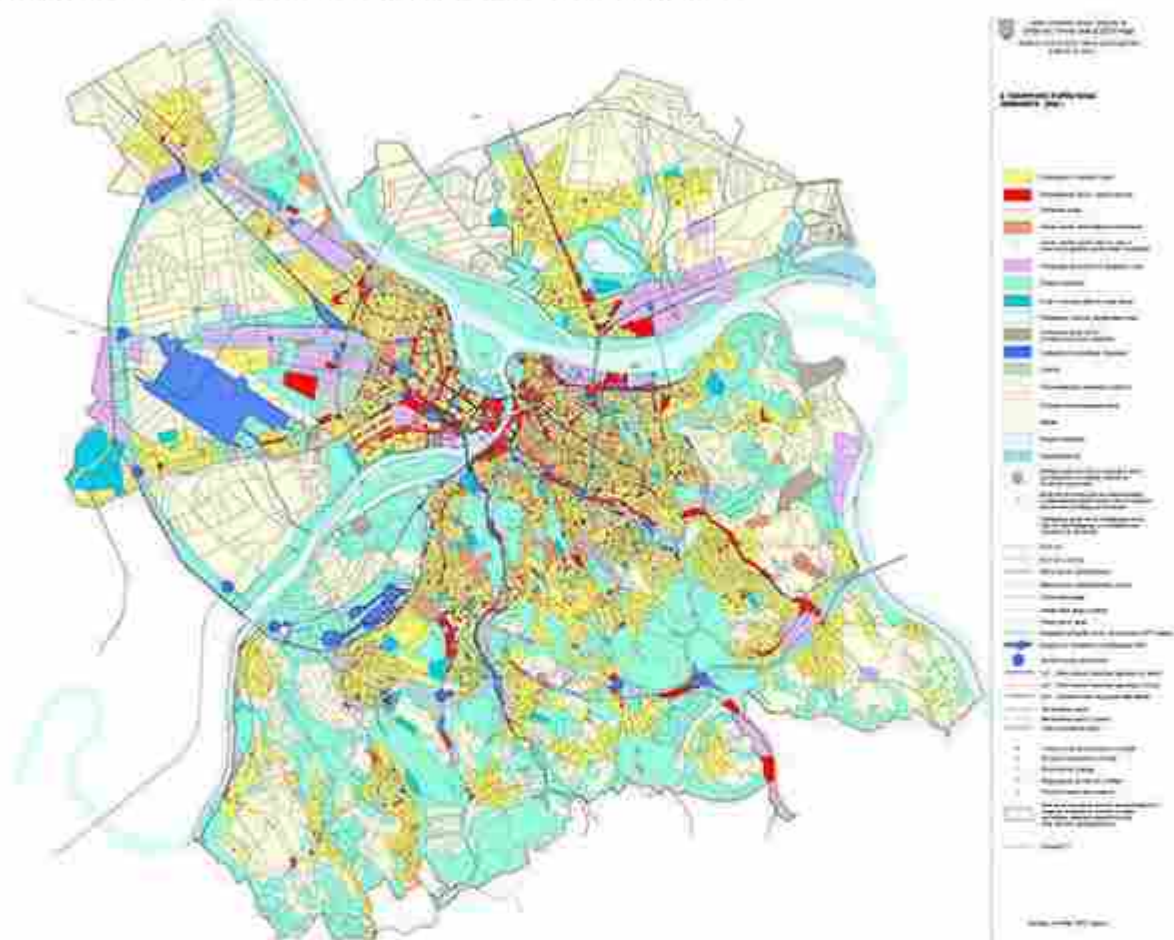
The majority of trips during peak periods is for the purpose of going to work, school or business. Concentrating attractive facilities in one location creates an improved one-time demand on the street network in the zone of these facilities. There are currently several central locations with the highest concentration of facilities which indirectly contribute to traffic problems in the city. Through the development of planning documentation, it is possible to plan new facilities by zones that currently have capacities that have not been used, i.e. it is possible to plan new contents in places where there is a possibility of improving the traffic offering. Through the construction of new facilities outside the city center, the central city zone will be relieved and at the same time the development of currently underused





areas will be promoted. The development of new facilities and their even distribution by municipalities must be accompanied by the adequate development of public transport and the interconnection of these facilities. Users must be provided with a fast and efficient way to access new facilities so that they can come to life and this concept can be maintained. Additionally, if reachability by public transport and non-motorized modes of transport is poor, the development of new facilities can lead to counter-effects and increase the share of the passenger car in the modal split. The main tool for the implementation of this measure is the development of a planning basis which defines the locations of new facilities and the infrastructure needed to connect them with existing facilities located in the city center.

**Indicators:** Change in the number of trips between municipalities



*General Urban Plan of Belgrade, 2016. – Planned land use*

## 9. BALANCED DEVELOPMENT OF ALL BELGRADE MUNICIPALITIES, IMPROVEMENT OF THEIR MUTUAL AND WIDER, REGIONAL CONNECTIONS

### 9.2. Relocation of public services outside the central city zones

#### Proposed implementation coordinators:

- City Administration
- Belgrade Land Development Public Agency
- Secretariat for Urban Planning and Construction

The concentration of public services in the central city zone creates a daily need for trip of people towards the center. Public services are large generators of trip that takes place not only during peak hours but also during working hours when trips for work purposes are generated. The current trend is to use the available facilities in the central city zone to accommodate public institutions. These are the locations with the highest real estate value and with the highest rental prices that could be used in other ways. Relocating individual - or groups of - public institutions outside the central city zone would change trip needs. Workers in public institutions would no longer have to come to the city center for work, and neither would the users of public services. At the same time, the available space in the city center could be repurposed for culture and thus enrich the tourist and cultural offering of the city. The figure below shows the current distribution of public buildings in



Belgrade. The relocation of the facilities should be done in a planned way so as to provide easy access to the facilities by public transport from all parts of the city.

**Indicators:** Change in the number of trips between municipalities



*General Urban Plan of Belgrade, 2016. – Public buildings*

## 9. BALANCED DEVELOPMENT OF ALL BELGRADE MUNICIPALITIES, IMPROVEMENT OF THEIR MUTUAL AND WIDER, REGIONAL CONNECTIONS

### 9.3. Subsidies for the construction and rental of business premises outside the central city zone

#### Proposed implementation coordinators:

- City Administration
- Belgrade Land Development Public Agency
- Ministry of Finance
- Secretariat for Urban Planning and Construction

In order to motivate the private sector to relocate its activities outside the central urban areas, it is necessary to consider the introduction of subsidies. Subsidies can vary depending on the needs of the private sector. When building new business premises and complexes, the city can determine the land with all the necessary infrastructure at preferential prices. In this way, the locations determined by the city will become more attractive and favorable for investors. For new and already existing business premises outside the central city zone, it is possible to provide tax relief for the lease of space, which would significantly reduce the cost of rent compared to similar premises in the central zone. The relocation of the private sector from the central zones will have a significant impact on reducing the number of trips in the central urban zone, but will also lead to the development of

municipalities outside the central urban zone. The construction of new business premises should be accompanied by the development of the public transport system, bicycle infrastructure, but also the necessary parking capacities. Users of new premises should be provided with easy access to business premises and less travel time compared to premises in the central city zone. If this is not the case, it is possible to give rise to resistance from employees as well as from the tenant companies, which may jeopardize the proposed strategy.

**Indicators:** Change in the number of trips within the central city zone





## ACTIVITIES

### 10. INFRASTRUCTURAL ACTIVITIES

#### 10.1. Completion of the Inner City Ring Road (ICRR)

##### Proposed implementation coordinators:

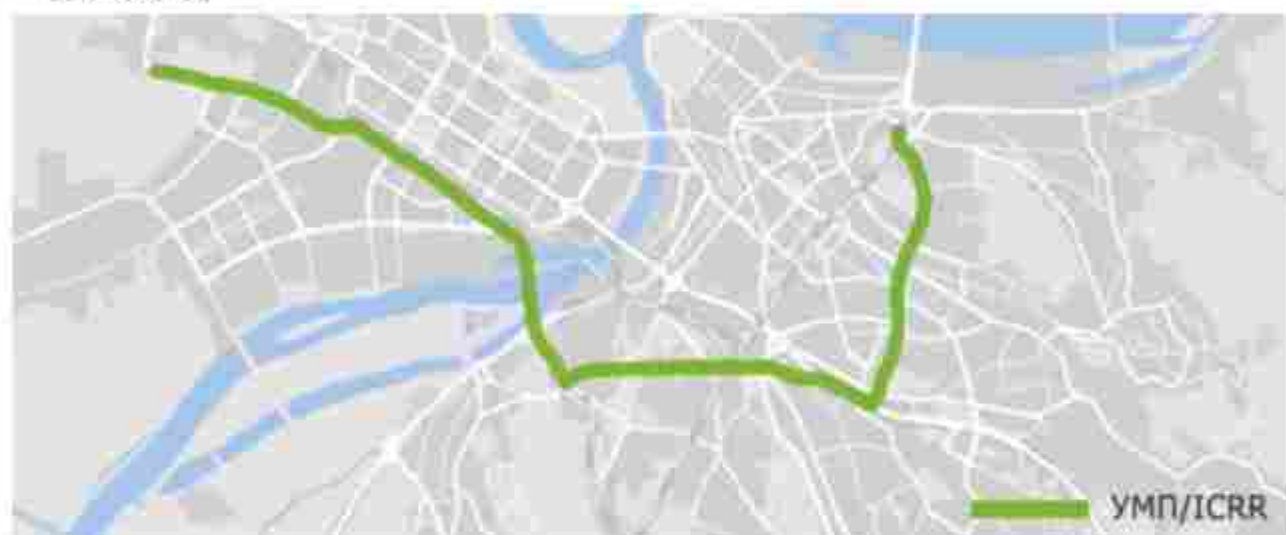
- *Belgrade Land Development Public Agency*
- *Secretariat for Transport*
- *Secretariat for Investments*

The Inner City Ring Road (ICRR) should represent a main road within the continuously built-up city area around the Central zone comprised of the old Belgrade core, the future center in the Sava amphitheater, the old and new center in new Belgrade and the old core of Zemun.

The completion of the Inner City Ring Road should create the conditions to interlink parts of town on the perimeter of the central area and protect the center from local and long-distance through . This connection should act as an alternative to radial trip through the center of town.

The total length of this road is about 17km, including the Ada Bridge. The project is divided into 5 sectors, of which only Sector 1 is complete. Sector 2/1 is under construction, while the remaining sectors are in various phases of procurement:

- **Sector 1**, is completed and partly included in the reconstruction of the T-6 road as well as the reconfiguration of roads that flow into Tošin Bunar.
- **Sector 2/1** connects Tošin Bunar in New Belgrade with Bulevar Patrijarha Pavla over the Ada Bridge.
- **Sector 2/2** includes a 2.2km long tunnel beneath Topčider hill, connecting Sector 2-1 with Autokomanda.



- **Sector 3** extends from Autokomanda to the existing loop of Šumice (Šumice junction).
- **Sector 4** connects the Šumice loop with Bulevar Kralja Aleksandra, following the existing route from Grčića Milenka Street and Pop Stojanova Street.
- **Sector 5** follows the existing route from Pop Stojanova and Severni Bulevar, connecting them with Bulevar Despota Stefana and Pančevo Bridge north of the loop.

The Smartplan concludes that Sectors 4 and 5 to the Šumice loop should be constructed in parallel, as should sectors 2 and 3, but in a later phase.

On the basis of the Smartplan estimations, completion of the ICRR would bring the greatest benefits as a standalone project.

**Indicators:** The number of constructed sectors compared to the total number of sectors

## 10. INFRASTRUCTURAL ACTIVITIES

### 10.2. Completion of the Outer Main Tangent Road (OMTR) with the Ada Huja bridge

#### Proposed implementation coordinators:

- *Belgrade Land Development Public Agency*
- *Secretariat for Transport*
- *Secretariat for Investments*

The Outer Main Tangent Road (OMTR) should be a tangential road intended to direct traffic flows from the northeast to other directions without passing through the central city zone, and primarily all transit and freight traffic for a more even distribution towards the zones of greatest attraction. The outer main tangent has been completed in its northern part from New Belgrade over Pupinov bridge and Ovča, to Pančevo road. In the remaining part of the route, OMTR should connect three entry routes to the city, namely: Pančevački put, Bulevar kralja Aleksandra (Smederevski put) and the highway. Due to its planned position in the street network of the city and the importance in connecting different city zones, the Outer Main Tangent Road is planned as a main road. The intersection of OMTR with lower-ranking roads is planned exclusively through grade-separated intersections, except in the zone between the loop of Dušana Petrovića Šaneta and Bulevar Kralja Aleksandra, where a single approach each is allowed on the principle of inflow-outflow for both directions of the road in question, in order to service the needs of the planned commercial, economic and communal facilities, as auxiliary facilities for the road users. The absence of this road causes significant congestion, which is recorded in the zones of Borska Street, Trošarina, the communities of Stepa Stepanović and Braće Jerković (the route of the ring-road). The significance of this project rests in increasing the resilience of critical city roads to possible negative impacts on the transport system. In addition, the alternative crossing of the Danube in the Ada Huja zone is important because the closest alternative is the Pupin Bridge at some distance to the west. The project, The Outer Main Tangent Road (OMTR), singlehandedly generates significant benefits in terms of time savings, reduced vehicle



operating costs and also serves various markets and communities within the central metropolitan area. The project generates positive, albeit more modest results compared to the ICRR. The completion of the The Outer Main Tangent Road and the merging with the completed part of the Inner City Ring Road would create a complete ring road around Belgrade which would interconnect parts of Belgrade around the central area and peripheral areas and contribute to the protection of the central area from local and long-distance transit traffic. The connection should be an alternative to radial trip through the city centre.

**Indicators:** The length of completed sections compared to the entire designed length.





## 10. INFRASTRUCTURAL ACTIVITIES

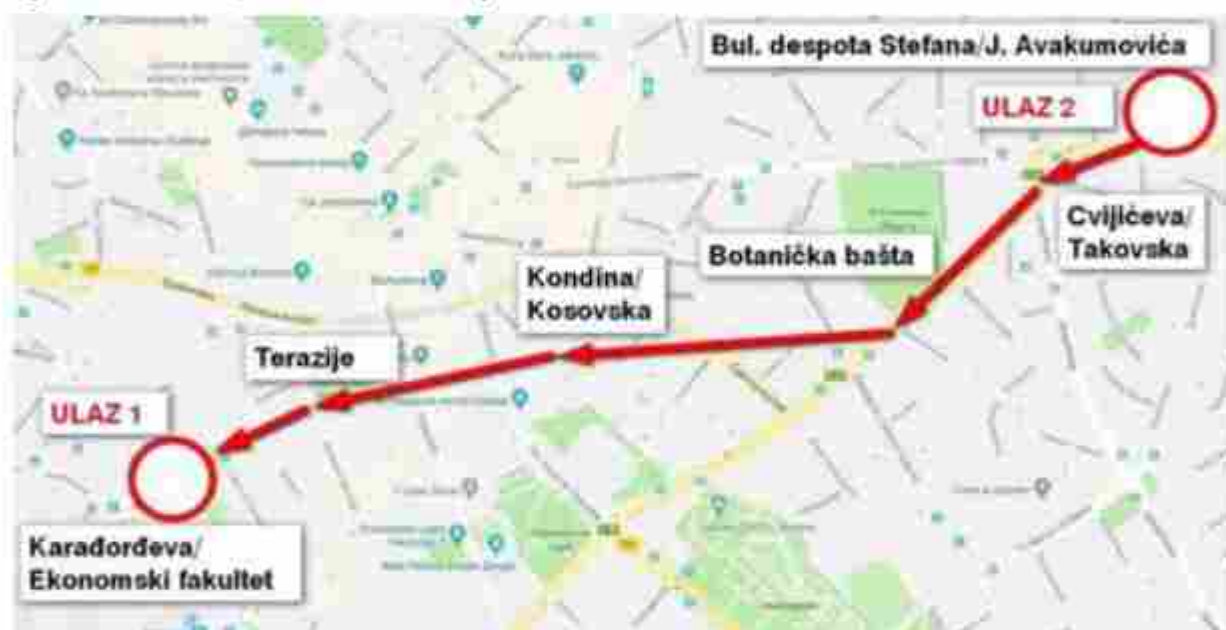
### 10.3. The old Sava Bridge and the tunnel connection between the Sava and Danube slopes

#### Proposed implementation coordinators:

- *Belgrade Land Development Public Agency*
- *Secretariat for Transport*
- *Secretariat for Investments*

**Bridge:** the supporting structure on the old Sava Bridge should be replaced, which would improve the bridge capacity by introducing 2 additional lanes per direction, while giving appropriate priorities in both directions to cyclists and pedestrians.

**Tunnel:** The proposed tunnel beneath the center of town would ease direct access for traffic coming over or towards the Old Sava Bridge (i.e. the banks of the Sava River) towards the bank of the Danube, Pančevo Bridge, and Palilula, while bypassing the city center. It is proposed that the tunnel have a total of four lanes, two in each direction, and would require the reconstruction of local streets and intersections in the surrounding zones around the entrance or exit. The proposed location of the western exit is perpendicular to Karađorđeva Street near the Faculty of Economics, and the two eastern exits are planned along the Bulevar Despota Stefana and Cvijićeve streets.



*Approximate tunnel route*

The Old Sava Bridge project/Tunnel Connection between Sava and Danube slopes, as well as the Outer Main Tangent Road (OMTR) will individually generate significant benefits when it comes to time savings, reduced vehicle use costs and also serve various markets and communities within the central area of the city. They generate positive but more modest results compared to the Inner City Ring Road (ICRR) project. Within Smartplan, it is estimated that the improvement of the Old Sava Bridge will in itself have a positive impact in terms of attracting traffic from the surrounding road network. However, these benefits are secondary, so no significant reduction in congestion is expected on key routes in the area such as Kneza Miloša Street, Bulevar Despota Stefana and the road around the Republic Square, since the time savings from using the new bridge are modest and limited to a narrow zone of influence. On the other hand, once the bridge and the tunnel are both in operation, they will provide more significant and far-reaching benefits to reducing network congestion. The expected benefits are significant on all surrounding roads along the routes that stretch from New Belgrade through the Old Town to the Pančevo Bridge (especially in Kneza Miloša Street and Bulevar Despota Stefana), which confirms the need for the synergy of these 2 projects. The significance of this project is reflected in the facilitation of travel between Palilula (Pančevo, Ovča, Krnjača, etc.) and New Belgrade (as well as the zones along the corridor in the Old Town) over Branko's Bridge and the reduction of congestion in local streets around the Republic Square.

**Indicators:** The length of completed sections compared to the entire designed length

## 10. INFRASTRUCTURAL ACTIVITIES

### 10.4. Metro

#### Proposed implementation coordinators;

- Ministry of Construction, Transport and Infrastructure
- PUC Belgrade Metro and Train
- Secretariat for Public Transport



Since the late 1970s, the City of Belgrade has explored the possibility of building a massive high-speed public transportation system that would improve the quality of life and functioning of Belgrade's 1,6 million metropolitan area. City public transport networks (bus, trolleybus and tram) are dense and high frequency, but their operation is quite inefficient, speeds are low and many lines overlap. Although it currently represents a small percentage of the total demand, suburban BG train lines have been gaining in importance since its opening in 2011, and the City Administration have committed to further expansion once the rehabilitation of tracks and stations is complete. Given that the dominant modes of public transport in the city mainly operate in mixed traffic, the need exists for the creation of a new mass fast public transport system. The metro network, which would complement the BG train network, is therefore considered to be the missing piece of the integrated public transport system and plays a key role in the successful spatial development of Belgrade. The goals of the City of Belgrade for the Metro Project stem from the long-term strategic vision for the development and growth of the metropolitan area of Belgrade, as stated in the Urban Transport Master Plan (Smartplan), which was updated in 2017 by WSP | Parsons Brinckerhoff and Juginus.

The key goals of the Metro project are twofold:

- To be part of a **fully integrated public transport system**, in which BG: train and the metro form a high-capacity transport system (the backbone of the public transport network) supported by the subsystems: bus, trolleybus and tram,
- Improve **transport availability and mobility within the existing polycentric city structure** (by connecting city cores, economic zones and recreational/tourist-attractive areas), but also **support major housing and development plans** in line with the City's priorities for future growth and development in the city center.

The solutions that form the basis of the approach outlined above are **sustainable transport planning without focus on the automobile** on the one hand, and the **interdependence of traffic and land use/transit-oriented development** on the other hand. Therefore, the prevailing concept of the metro is based on the following main principles:

- A **separate corridor** to maximize the commercial speed and efficiency of the metro
- **Obtaining the highest possible benefit from the investment cost**, because large capacity, fast and comfortable transportation is obtained that does not require higher municipal subsidies than those currently issued as a supplement to the existing costs of buses/trolleybuses/trams. It should be noted that according to the financial analysis, this goal seems impossible to achieve without a detailed revision of the ticket collection policy
- Direct access to the **largest passenger generators and places with attractive facilities** and incentives for **development in greenfield and brownfield locations**, mainly along the Sava and Danube rivers
- Assistance to **unblock the value of land capital owned by the city and benefit from the newly created land value** (new construction fees and charges, new tax revenues, etc.)
- **Minimum purchase of land** and priority to use existing corridors for separate purposes (soon-to-be-abandoned railway corridors, old port facilities, old factories/warehouses, etc.). However, the City is determined to remove all physical obstacles created by traffic infrastructure, especially in the areas of urban development. Therefore, the integration of subway infrastructure on the surface of the terrain should be avoided, regardless of the integration principles proposed in Smartplan
- It is envisaged that the project will **become the property of the newly formed public utility company "Belgrade Metro and Train"** which will be financed by the Republic of Serbia and the City of Belgrade (founded on September 25, 2018)

The general route of the first two metro lines was defined in the Smartplan that was updated in 2017. During the initial phase of the current task, a preliminary analysis of the direction of the reference route was performed for each line connecting the stations originally designated as reference stations by the Metro Commission. The direction of the reference route was reconsidered (according to different criteria such as future fit into the urban fabric and possible construction method, geometric constraints, determining the optimal distance and route between stations). This reconsideration led to a changed route and location of stations for the reference route.

Preferred routes selected by the Metro Commission for each line:

**Line 1 (23 stations, 21,3 km)**

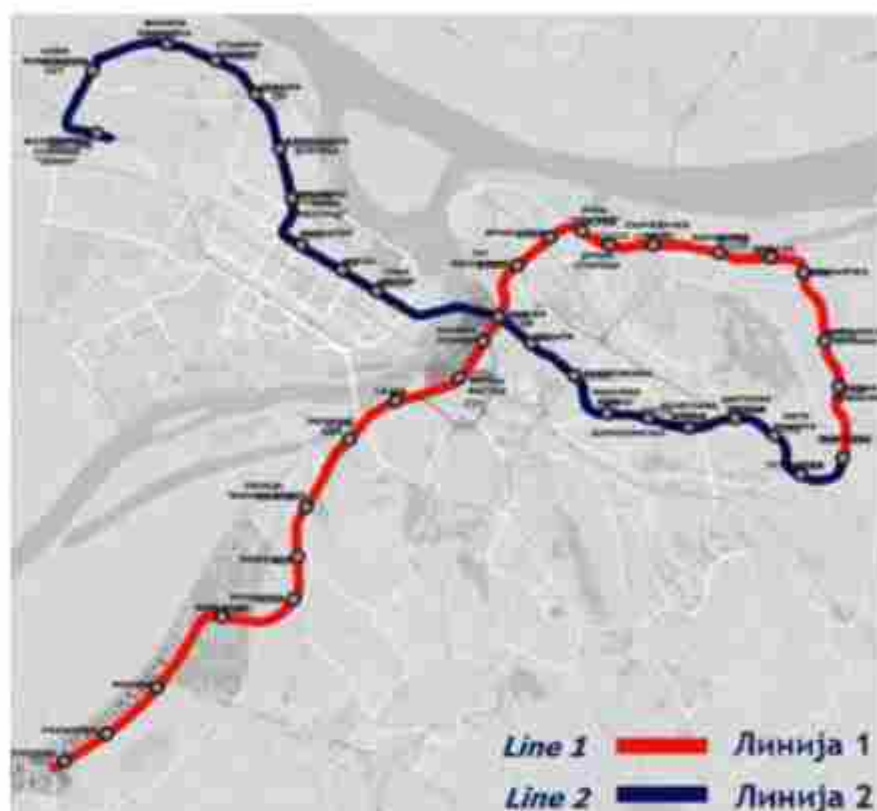


- Section 1 (from Železnik station to Požeška station): 6 stations, 2,3 km at surface level, 2 km built by cut-and-cover and 1,7 km built by tunnel boring
- Section 2 (from Požeška to Ada Bridge station): 3 stations, 2,2 km built by tunnel boring
- Section 3 (from Ada Bridge to Trg Republike station): 6 stations, 4,4 km built by tunnel boring;
- Section 4 (from Trg Republike to Pančevo Bridge station): 5 stations, 3 km built by tunnel boring
- Section 5 (from Pančevo bridge to Mirijevo station): 7 stations, 5,7 km built by cut-and-cover

**Line 2 (20 stations, 19,2 km)**

- Section 1 (from Zemun station to Aleksandra Dubčeka station): 6 stations, 5,8 km built by cut-and-cover
- Section 2 (from Aleksandar Dubček to Sava Centar station): 5 stations, 3,8 km built by cut-and-cover (or above ground)
- Section 3 (from Savski trg to Cvetkova Pijaca station): 7 stations, 6,3 km built by tunnel boring
- Section 4 (from Cvetkova Pijaca to Mirijevo station): 4 stations, 3,1 km built by tunnel boring and 0,2 km built by cut-and-cover

**Indicators:** Total length of completed line network, level of service in the network of city roads



## 10. INFRASTRUCTURAL ACTIVITIES

### 10.5. Construction of public garages

#### Proposed implementation coordinators:

- *Belgrade Land Development Public Agency*
- *Secretariat for Investments*
- *Secretariat for Transport*
- *PUC Parking Service*

This measure implies the abolition of street parking in the inner city. The abolition of parking lots requires the construction of parking garages that will meet the existing needs of users. This measure has already been defined through the existing planning documentation. It is necessary to make plans for the detailed regulation of each planned garage separately, as well as urban plans for garages that have been defined.

**Indicators:** Surface of completed garages, the number of garage parking lots



## 10. INFRASTRUCTURAL ACTIVITIES

### 4.2.4./10.6. Construction of parking lots with the aim of implementing the "Park and Ride" system on peripheral terminuses

#### Proposed implementation coordinators:

- Secretariat for Transport
- Belgrade Land Development Public Agency
- Secretariat for Public Transport

In order to successfully implement the parking regime, users need to be offered an alternative in the form of quality public transport or the possibility of parking on the edge of the central zone without a time limit. Many countries use the Park & Ride system, where users are allowed to park outside the central zone and continue their journey by public transport, at a price that is symbolic compared to the price of parking in the central zone. The correct choice of the locations of the Park & Ride parking lots affects the success of the entire system. In Belgrade, there is a parking lot that operates on the principle of Park & Ride in a general parking lot outside the zoned area near the new terminus in Vladimira Popovića Street. After parking their vehicle, users can continue their journey using public transport lines that operate in the immediate vicinity of the parking lot (trams: 7, 9, 11 and 13; buses: 27E, 35, 78 and 83). Parking is free for holders of valid BusPlus subscription cards. According to the General Urban Plan of Belgrade ("Official Gazette of the City of Belgrade", No. 11/16), the second phase in solving the problem of vehicle parking involves ensuring the development and high level of public urban and suburban transport services, with the aim of reducing the number of cars in the central zone, the planning and construction of garages and off-street parking lots in the zones of stations and public transport stops, especially on the routes of high-capacity rail systems (metro and BG: train) on the edge of the central zone with the introduction of the Park & Ride system. The General Regulation Plan of the construction area of the seat of the local self-government unit – City of Belgrade, units I-XIX ("Official Gazette of the City of Belgrade", No. 20/16) gives the possibility that the spaces for the realization of





Park & Ride parking can be implemented through the preparation of urban design for the existing plot. The General Regulation Plan (PGR) of the public garage network ("Official Gazette of the City of Belgrade", No. 19/11) defines the zone of continuously built-up area (Srb. KIP) - the area that includes the area between the central zone and the continuously built-up area border, where the parking problem is unevenly perceived and depends on the content generated by the visitors. The zones of the New Belgrade blocks and Banovo brdo are two zones within the continuously built-up area with the most pronounced problem in the area of vehicle parking. In the zone of the continuously built-up area, some smaller zones have been identified as having the most pronounced parking problems, so that this is the zone in which the General Regulation Plan of the public garage network proposes certain locations of public garages and parking lots for the Park & Ride system. Locations for car parks and garages in the Park & Ride system must be planned in relation to the routes of public transport lines and positioned in the zone of the continuously built-up area. The main role of garages or parking lots at these locations is to, in addition to meeting the needs for parking vehicles of users of facilities in the gravitation zone, offer a service for users who can leave their vehicle in that area and continue their journey by some form of public passenger transport. Garages and parking lots near all major traffic terminals can play such a role, such as:

- Pančevo bridge
- Požeška terminus
- Ustanička
- Ada Ciganlija
- Banjica – Beranska
- New Belgrade – the railway station
- Nikola Tesla airport
- BG:voz stations: Zemun, Tošin Bunar, Krnjača, Rakovica

**Indicators:** Number of parking lots provided

## 10. INFRASTRUCTURAL ACTIVITIES

### 10.7. Continuation of Gospodara Vučića Street - Aradska - Čingrijiina - Dimitrija Tucovića

#### Proposed implementation coordinators:

- *Belgrade Land Development Public Agency*
- *Secretariat for Transport*
- *Secretariat for Investments*

This street network solution originated from the concept defined by the Plan of general regulation of the development area of the seat of the local self-government unit - the city of Belgrade (units I - XIX) ("Official Gazette of the City of Belgrade", No. 20/16, 97/16, 69/17 and 97 / 17). Following this concept, would serve to connect the streets of Gospodara Vučića, Stjepana Kovača, Čingrijiina and Dimitrija Tucovića, which are, according the functional ranking of the city's street network, streets belonging to the primary network, or streets of the first order. Here, a widening of Dimitrija Tucovića is proposed, from its intersection with Batutova to its intersection with Učitelja Miloša Jankovića street. This flows into



Čingrijiina, from Učitelja Miloša Jankovića to its intersection with Preševska, while from Preševska to Stjepana Kovača Street, a new section of this traffic link is proposed – Nova 1 Street. The implementation of this measure, through the construction of streets with a wider cross-section, would create better conditions for connecting Gospodara Vučića and Dimitrija Tucovića streets, which see a high intensity of traffic in their current state, and can also be expected to relieve King Alexander Boulevard and Batutova Street, which currently represent the main connection between the aforementioned streets.

**Indicators:** Travel time

## 10. INFRASTRUCTURAL ACTIVITIES

### 10.8. Pedestrian bridge connecting Ada Ciganlija and New Belgrade blocks

#### Proposed implementation coordinators:

- Secretariat for Transport Investments
- Belgrade Land Development Public Agency
- Secretariat for Transport

The proposed activity is the construction of a pedestrian-bicycle bridge that will connect Omladinskih Brigada Street in Block 70 with Ada Ciganlija. The location in Block 70a, i.e. in the extension of Omladinskih Brigada, was chosen because there is a good connection with public transport, as it is close to bus stops 67, 76 and 708 and is also the departure location for the taxi boats that have been ferrying New Belgraders to Ada Ciganlija for decades.



The construction of the bridge would enable a pedestrian connection between the New Belgrade side of the city and Ada Ciganlija. Ada Ciganlija is the generator of a large number of trip for the purpose of both rest and recreation for the citizens of the city of Belgrade. The attractiveness of this part of the city results in a large number of vehicles that travel and park in the area of Ada Ciganlija and which thus create congestion during peak periods and during the weekend when the attraction of this location is much higher. The construction of a pedestrian-bicycle bridge would reduce the existing congestion, as well as reduce the number of motor vehicles and improve the number of pedestrian trip. Also, users from New Belgrade would be provided with a permanent pedestrian connection from New Belgrade to Ada Ciganlija.

**Indicators:** The number of passenger trips, occupation of parking spots in the Ada Ciganlija area, etc.



*Proposed appearance of the pedestrian-cycle bridge linking New Belgrade and Ada Ciganlija.*



## 10. INFRASTRUCTURAL ACTIVITIES

### 10.9. Redesign of the Zrenjanin road to the Inner City Ring Road

#### Proposed implementation coordinators:

- *Secretariat for Investments*
- *Belgrade Land Development Public Agency*
- *Secretariat for Transport*
- *Roads of Serbia*
- *PE Roads of Belgrade*

The Zrenjanin road is one of the busiest trunk roads leading into Belgrade. In the existing condition on the section from Pančevo bridge to Ivana Milutinovića street (entrance to Borča communities) there are two traffic lanes per the direction (about 5 km) and from Ivana Milutinovića street to the Zbeg loop there is one traffic lane per direction (about 3 km). In addition to the above, this road has a significant role in the operation of local traffic, given that it directly services facilities in the corridor of the road. In accordance with the above, in order to segregate local and long-distance traffic, as well as to improve the conditions for safe traffic, it is necessary to ensure the capacity of this road in accordance with the estimated transport requirements and conditions for safe traffic. Due to the fact that, as a consequence of unplanned construction, the Zrenjaninski put main road has become unsafe and uncomfortable with frequent interruptions of traffic flows, a complete reconstruction of this road is planned. After considering several variants, the proposed route has a cross-section which contains two 9,5 m roadways with three traffic lanes each, a 4,0 m dividing island, pedestrian paths on both sides of 2,5 m each and bicycle paths on both sides of 1,5 m each. At the positions of the public transport stops, the width of the pedestrian plateaus is 3,0 m. The connection between Zrenjaninski put and the secondary traffic network is realized by planned intersections with a full program of connections and intersections of the inflow-outflow type. The planned intersections with a full program of connections are with Grge Andrijanovića Street, Sutjeska Street and Azanjska Street. Other intersections are inflow-outflow type.

**Indicators:** Level of service on Zrenjanin road, travel time, number of traffic accidents, etc.



## 10. INFRASTRUCTURAL ACTIVITIES

### 10.10. Redesign of existing intersections into roundabouts

#### Proposed implementation coordinators:

- *Belgrade Land Development Public Agency*
- *Secretariat for Transport*
- *Secretariat for Investments*

The proposed activity involves the redesign of existing traffic-light intersections into roundabouts and is based on the Feasibility Study for the construction of roundabouts in Belgrade, which analyzed 133 traffic light intersections on the territory of the city of Belgrade. By analyzing the criteria related to space constraints, the number of approaches, geometry, traffic load, participation in the coordinated system of light signals, presence of trams at the intersection, the safety criterion, the economic criterion, the ecological and traffic flow criterion, the study determined the suitability of the redesign of 4 roundabouts out of 133 existing traffic-light intersections on the territory of the city of Belgrade. A detailed analysis suggests the redesign of the following intersections:

- Borča - Zrenjaninski put - Ovča
- Balkanska - Admirala Geparata
- Savska magistrala- Bore Stankovića (Road to Železnik)
- Trgovačka – Jablanička

Within the study, variant solutions for the aforementioned intersections were using micro simulation of traffic flow programs (VISSIM), capacity check (SIDRA program), and in that way the effects of the introduction of these changes were considered in detail. A cost-benefit estimate of the redesign investment was also determined as part of this study. The proposed solutions for the 4 intersections in question are envisaged for realization in the 1st phase, by 2023. In the 2nd and 3rd phase, according to the same criteria, it is necessary to select 8 intersections for redesign by 2028, and 6 intersections for redesign by 2031, respectively.

**Indicators:** Fuel consumption, emissions, noise, time losses, flow, speed, level of service, user safety, etc.





*Borča – Zrenjaninski put – Ovča*



*Savska magistrala – Bore Stankovića*



*Balkanska – Admirala Geprata*



*Trgovačka- Jablanička*



## 0. GENERAL ACTIVITIES

### 0.1. Educational programs and promotional campaigns

#### Proposed implementation coordinators:

- Secretariat for Transport
- Road Traffic Safety Agency
- Secretariat for Public Transport
- Other stakeholders...

This activity can be a part of each of the measures envisaged for achieving the goals of SUMP because it implies the acquisition and improvement of the knowledge and behavior of all/targeted traffic participants. The development and implementation of new technologies (Bus Plus system, ticket purchase via mobile phone, modern parking payment systems, pedestrian keys, etc.) creates a need to educate people, especially the elderly, on how to use them. On the other hand, educational programs, forums, and workshops are useful measures in educating children and developing the desired behavior when participating in traffic. Adequate and efficient campaigns can **improve the behavior of participants in traffic**: e.g. drawing the attention of motor vehicle drivers to the fact that vulnerable groups of users, cyclists or some other category of non-motorized users (people on scooters, rollerblades, skateboards, etc.) are also active participants in traffic on the road. Campaigns can also be used for promotional purposes, e.g. when users need to be introduced to the new bike & ride system, public bicycle system or when traffic participants need to be motivated to use alternative modes of trip: bicycles, walking or the use of modern technologies to improve the safety of non-motorized road users.

**Indicators:** The safety of certain categories of participants



## 0. GENERAL ACTIVITIES

### 0.2.1. Regulatory improvement

#### Proposed implementation coordinators:

- *Secretariat for Transport in cooperation with the proponents of amendments to the law in the field of safety*
- *Secretariat for Public Transport in cooperation with the proponents of amendments to the law in the field of public transport*
- *Ministry of Construction, Transport and Infrastructure*
- *Ministry of Interior*
- *Ministry of Finance*

The degree of development of the transport system is largely conditioned not only by the existence of infrastructure, but also by the planning and design documentation, which has its foundation in the legal framework. This measure envisages the **development of legislation**, as well as its **improvement**.

The development and improvement of the existing legislation provides the legal basis for further improvements and implementation within the entire transport system and all its subsystems. When it comes to non-motorized users, there is a notable lack of regulations when it comes to **bicycle traffic**, and it is necessary to start its development as soon as possible, primarily the development of the Rulebook and standards on cycling infrastructure, which would clearly define all the necessary elements. Regarding bicycle traffic, it is very important that the amendments to the existing legislation provide a legal basis for the **transport of bicycles** in urban public transport vehicles, as well as a **two-way traffic regimen** for bicycle traffic in one-way streets. The legal solution should include all subsystems of the public transport system, both in urban, suburban, and intercity traffic. Amendments to the legislation require the provision for **cargo bicycle traffic**. It is also necessary to improve the existing Rulebooks and standards intended for **pedestrian** infrastructure and vulnerable groups, as well as laws and bylaws that regulate the safety of non-motorized road users. Measures to **encourage and improve non-motorized modes of trip** can be achieved through various fiscal incentives. This measure envisages a set of activities that will improve and **promote alternative** modes of trips precisely through certain fiscal incentives. For example: lower prices of bicycles for first-time or regular buyers, lower prices of public bicycle services, rewarding the desired behavior of users, etc. An additional incentive for alternative modes of transport and demotivation of motor traffic is introducing a fee for entry into the central zone of the city, fiscal repression for owning a larger number of vehicles per household or changes in tariff policy in the public transport system. Measures for demotivation of motor traffic can be achieved by legislative regulation in the field of "**ride sharing**" – car pooling (such as BlaBlaCar). Amendments to the law in the field of traffic safety, which should influence the encouragement of alternative modes of transport in the area of the so-called "**e-micromobility**" such as the use of electric scooters, bicycles, scooters, rickshaws, etc.

**Indicators:** Modal share of daily trips



## 0. GENERAL ACTIVITIES

### 0.2.2. Measures for fiscal incentives

#### Proposed implementation coordinators:

- *Secretariat for Transport in cooperation with the proponents of amendments to the law in the field of safety*
- *Secretariat for Public Transport in cooperation with the proponents of amendments to the law in the field of public transport*
- *Secretariat for Finance in cooperation with the proponents of amendments to the law in the field of tax policy*
- *Ministry of Construction, Transport and Infrastructure*
- *Ministry of Interior*
- *Ministry of Finance*



Employer and government stimulation of the use of sustainable modes of transport to get to work - this measure aims to stimulate the use of sustainable modes of transport by employees. The plan for the implementation of the measure is to encourage employees through:

- Subsidies or free public transport for employees
- Tax breaks. Monthly fees for the use of sustainable modes of transport will reduce the annual tax of the employee as well as the employer
- Last kilometer transportation, provide transportation for employees between the workplace and the transit terminal
- Provide a taxi connection for employees between the house and the nearest transit terminal
- Promote car sharing
- Public transport promotion in workspaces
- Educating employees through materials and seminars can help encourage people that using public transport for work is right for them.
- The introduction of flexible working hours can encourage employees to use public transport

The application of a combination of these strategies would lead to positive effects that would benefit the citizens of Belgrade.

**Indicators:** The modal share of daily trips of employees, which can be established by polling employees before and after this measure is implemented



## 0. GENERAL ACTIVITIES

**0.3.** Development of Big data platforms for traffic data collection, new traffic studies, and/or innovation of transport models and existing databases for further development and testing of measures

### Proposed implementation coordinators:

- *Secretariat for Transport*
- *Secretariat for Public Transport*
- *PUC Belgrade Metro and Train*

The Belgrade transport model was developed in 2003, and has been updated several times since, as well as being redesigned for the needs of the Belgrade Transport Master Plan, to enable the analysis and planning of measures for the development of the Belgrade transport system. When the model was developed, several demand modeling tasks were done outside the transport model in VISUM. In particular, most demand models were created in Excel. Outside of VISUM, the calculation of traffic generation and distribution is unclear and unsophisticated, and the results are fixed and difficult to improve. Integrating the four-stage

demand calculation model into VISUM will help understand the links between socio-economic data and traffic demand and make future improvements to the model easy and transparent. The most important improvement would be in the domain of the calculation of modal split. In the current model, the modal split for each zone is fixed and unchangeable relative to other parameters. Within VISUM, a very detailed set of parameters is available for selecting the modal split. The development of such a model would enable a better quality of analysis for each proposed measure or intervention in the transport system of Belgrade. Big data databases on the mobility of traffic participants are provided by mobile telephony operators, public transport carriers, online navigation platforms, etc. in real-time, for traffic management and prediction.

**Indicators:** Modal share of trips; level of service of the street network; level of service of the public transport system; etc.



## 0. GENERAL ACTIVITIES

**0.4. Improving communication and cooperation between relevant authorities responsible for the management of the city's transport system, maintenance and construction of transport infrastructure, and involvement of the local community in decision-making processes**

### **Proposed implementation coordinators:**

- *Secretariat for Transport*
- *Secretariat for Public Transport*
- *Ministry of Construction, Transport and Infrastructure*

These activities include:

1. organizing constant communication between representatives of relevant institutions of the city and the republic, harmonization of their work, joint monitoring of traffic conditions, city planning and cooperation in solving problems

- formation of a service with representatives of all relevant institutions in order to coordinate activities with the aim of optimal management of city resources
- clear division of competencies
- monitoring of design, construction, etc. for interventions on the traffic network
- harmonization and dynamics of work
- regular reporting to the public on activities and results

2. involvement of citizens in the decision-making process through surveys, public debates, workshops, etc. and after the enactment of the SUMP

- development of an internet portal for continual informing of citizens (information regarding execution of works, passability, public transport operation regime, information on traffic pollution, parking lots, intersection of different modes of traffic, entrances/exits from the city, traffic accidents, rest areas and gas stations, etc.)
- surveys
- discussions on upcoming projects
- enabling constant communication (answering inquiries and applications)

**Indicators:** Number of internet portal views





## 0. GENERAL ACTIVITIES

### 0.5. Support for the development of Sustainable Urban Mobility Plans in urban municipalities that are outside the boundaries of the General Plan of Belgrade

#### Proposed implementation coordinators:

- City of Belgrade
- Urban municipalities (Surčin, Obrenovac, Barajevo, Lazarevac, Sopot, Mladenovac, Grocka)
- Secretariat for Transport
- Secretariat for Public Transport



The proposed activity primarily implies professional assistance in the implementation of similar measures in municipalities that are not within the boundaries of the GUP. Support for the development of plans is based on the education of municipalities through workshops where the European concept of sustainable urban mobility planning will be presented, as well as the methodology developed by the European Commission for this purpose (the so-called ELTIS methodology). Special focus should be placed on the experiences of municipalities that have implemented SUMP measures and consideration of all the effects that the measures have produced. Planning teams should establish good communication with the teams that have developed plans for neighboring municipalities, and the measures proposed in these plans should be complementary. In addition to professional assistance, support should also consist of financial and political support. This type of support is necessary in order to involve as many stakeholders as possible in the planning process. Public institutions within municipalities should promote the development of the plan and actively participate in workshops and public forums. It is also necessary to organize sponsorships that will stimulate citizens to get actively involved and contribute their suggestions to the development of the plan. City municipalities that are outside the borders of the Belgrade GUP are: Surčin, Obrenovac, Barajevo, Lazarevac, Sopot, Mladenovac and Grocka. Sustainable urban mobility plans can be done as individual/independent for each of these municipalities or as polycentric - they include several municipalities that gravitate to each other.



**Indicators:** Municipalities where SUMP is adopted





## **ACTION PLAN**

# 6.



## RESPONSIBILITIES AND RESOURCES

The implementation of action plans is to be financed from the budget, as follows:

- **The Budget of the Republic of Serbia:** funds from the state budget according to the plans of competent ministries
- **The Budget of the City of Belgrade:** funds from the city budget according to the plans of the competent secretariats and public-utility companies with budgets of their own

In addition to budget funds, the proposed sources of financing are also funds from the following sources:

- **Donations (co-financing):** funds that can be provided as grants from international financial institutions (WB, EBRD, EIB, WBIF, CEB, EU, EC, IPA, etc.), UN agencies (UNDP, UNOPS, etc.), private companies and the like
- **Loans:** funds that can be secured as loans from international financial institutions, banks and funds.
- **Public-private partnership:** various forms of engagement of funds from private investors (PPP, concessions, DBFO, etc.)

The meaning of the terms listed for sources of funding are:

- WB - World Bank,
- EU - European Union,
- EC - European Commission,
- EBRD - European Bank for Reconstruction and Development,
- IPA - Instrument for Pre-Accession Assistance of the European Union,
- EIB - European Investment Bank,
- CEB - Council of Europe Development Bank,
- WBIF - Western Balkans Investment Framework,
- DBFO - Design-Build-Finance-Operate,
- UN - United Nations,
- UNDP - United Nations Development Program,
- UNOPS - United Nations Office for Project Services,
- PPP - Public-private partnership,
- GIZ - German Organization for International Cooperation,
- and others.



Table 6.1. – Action plan for proposed measures – Responsibilities, competencies, funding sources

Goal	Measure	Measures	Responsibilities/Resources	Competency	Funding Source
1	1	Improving existing pedestrian infrastructure	Belgrade CA, Secretariat for Transport	Initiation, Promotion and Coordination	Budget of the City of Belgrade
			Belgrade Land Development Public Agency	Preparation of documentation, Execution and Supervision	
			PE Roads of Belgrade	Operation and Maintenance	
	2	Improving connections with other modes of transport	Belgrade CA, Secretariat for Transport	Initiation	Budget of the City of Belgrade
			Belgrade CA, Secretariat for Public Transport	Promotion and Coordination	
			Belgrade Land Development Public Agency	Preparation of documentation, Execution and Supervision	
	3	Development of pedestrian and integrated streets, super-blocks and spaces	PE Roads of Belgrade	Operation and Maintenance	Budget of the City of Belgrade, Donations
			Belgrade CA, Secretariat for Transport	Initiation, Promotion and Coordination	
			Belgrade Land Development Public Agency	Preparation of documentation, Execution and Supervision	
2	1	Cycling network development (paths, lanes, parking racks)	Belgrade CA, Secretariat for Transport	Initiation, Promotion and Coordination	Budget of the City of Belgrade
			Belgrade Land Development Public Agency	Preparation of documentation, Execution and Supervision	
			PE Roads of Belgrade	Operation and Maintenance	
	2	Improving the existing cycling infrastructure	Belgrade CA, Secretariat for Transport	Promotion and Coordination	Budget of the City of Belgrade
			Belgrade Land Development Public Agency	Preparation of documentation, Execution and Supervision	
			PE Roads of Belgrade	Initiation, Operation and Maintenance	
	3	Implementation of a public bicycle system (Bike sharing)	Belgrade CA, Secretariat for Transport	Initiation, Promotion and Coordination, Preparation of Documentation, Execution and Supervision	Budget of the City of Belgrade, Public-Private Partnership
			Operator(s)	Promotion, Operation and Maintenance	
	4	Enabling transport of bicycles within vehicles of the city's public transport system	Belgrade CA, Secretariat for Transport	Promotion	Budget of the City of Belgrade, Donations
			Belgrade CA, Secretariat for Public Transport	Initiation, Promotion and Coordination	
			Operator(s)	Promotion, Operation and Maintenance	
			FUC Belgrade Metro and Train	Promotion	

Goal	Measure	Measures	Responsibilities/Resources	Competency	Funding Source
2		Promotion of cycling tourism - realization of Eurovelo routes and bed-and-bikes	Tourism organisation of Belgrade	Initiation, Promotion and Coordination, Preparation of Documentation, Execution and Supervision	Budget of the Republic of Serbia, Donations
			Belgrade CA, Secretariat for Transport	Promotion	
3	1	Development and improvement of the structure and operation of the entire public transport system	Belgrade CA, Secretariat for Public Transport, Secretariat for Transport Operator(s)	Initiation, Promotion and Coordination, Supervision Operation and maintenance	Budget of the City of Belgrade, Loans
			Transport engineering companies	Preparation of Documentation and Execution	
	2	Development and improvement of high-capacity public transport rail subsystems	Operator (s)	Operation and Maintenance	Budget of the Republic of Serbia, Budget of the City of Belgrade, Loans, Public-Private Partnership
			Belgrade CA, Secretariat for Public Transport	Initiation	
			Belgrade CA, Secretariat for Investments	Promotion and Coordination	
			PUO Belgrade Metro and Train	Preparation of Documentation, Execution and Supervision, Operation	
	3	Development of public transport subsystems on the rivers	Belgrade CA, Secretariat for Public Transport	Initiation	Budget of the Republic of Serbia, Budget of the City of Belgrade, Public-Private Partnership
			Operator(s)	Operation and Maintenance	
			Port Governance Agency	Preparation of Documentation, Execution and Supervision	
			Directorate for Waterways - Plovidput	Promotion and Coordination	
4	1	Development of e-mobility services (public transport and micro mobility sectors)	Belgrade Land Development Public Agency	Preparation of Documents, Execution and Supervision	Budget of the City of Belgrade, Public-Private Partnership
			Belgrade CA, Secretariat for Transport	Promotion	
			Operator(s) and Belgrade CA, Secretariat for Public Transport	Operation and Maintenance Initiation	
			Belgrade CA, Secretariat for Investments	Promotion and Coordination	
	2	Development of multi-mobility services (mobility sharing)			Budget of the City of Belgrade, Public-Private Partnership
			1. Car sharing		
			Belgrade CA, Secretariat for Transport	Initiation	
			Belgrade CA, Secretariat for Public Transport	Coordination and Promotion, Preparation of Documentation, Execution and Supervision	
			Belgrade CA, Secretariat for Commerce	Promotion	

Goal	Measure	Measures	Responsibilities/Resources	Competency	Funding Source
		2. Car pooling	Belgrade CA, Secretariat for Transport Ministry of Interior	Initiation, Promotion and Coordination Supervision	Budget of the City of Belgrade, Donations
		3. Bike&ride	Belgrade CA, Secretariat for Transport Belgrade CA, Secretariat for Public Transport, Belgrade Land Development Public Agency Operator(s)	Initiation Coordination and Promotion, Preparation of Documentation, Execution and Supervision Promotion, Operation and Maintenance	Budget of the City of Belgrade, Budget of the Republic of Serbia
		4. Park&ride	Belgrade CA, Secretariat for Transport Belgrade CA, Secretariat for Public Transport, Belgrade Land Development Public Agency Parking Service	Initiation, Promotion Coordination and Promotion, Preparation of Documentation, Execution and Supervision Operation and Maintenance	Budget of the City of Belgrade
		3. Development of the MaaS concept (Mobility-as-a-Service)	Belgrade CA, Secretariat for Public Transport, Secretariat for Transport Transport engineering companies	Initiation, Promotion and Coordination Preparation of Documentation, Execution and Supervision	Budget of the City of Belgrade, Public-Private Partnership
		4. Parking demand management	Belgrade CA, Secretariat for Transport Belgrade Land Development Public Agency Parking Service Belgrade CA, Secretariat for Public Transport	Initiation, Promotion and Coordination Preparation of Documentation, Execution and Supervision Operation and Maintenance Promotion	Budget of the City of Belgrade, Public-Private Partnership
	5	1. Public space safety	Belgrade CA, Secretariat for Transport Ministry of Interior PUC Public Lighting FE Roads of Belgrade	Initiation, Promotion Coordination Preparation of Documentation, Execution and Supervision, Operation and Maintenance Operation and Maintenance	Budget of the City of Belgrade, Donations
		2. Improving safety and security of pedestrians and other non-motorized traffic participants	Belgrade CA, Secretariat for Transport Ministry of Interior	Initiation, Promotion Coordination, Execution, Operation	Budget of the City of Belgrade, Budget of the Republic of Serbia, Donations
		3. Adjusting existing infrastructure and improving accessibility for vulnerable user categories	Belgrade CA, Secretariat for Transport FE Roads of Belgrade Other stakeholders	Initiation, Promotion and Coordination Operation and Maintenance Promotion	Budget of the City of Belgrade, Donations



Goal	Measures	Responsibilities/Resources	Competency	Funding Source
6	4 Adjusting the public transport system according to the needs of vulnerable groups	Belgrade CA, Secretariat for Transport	Promotion	Budget of the City of Belgrade, Donations
		Belgrade CA, Secretariat for Public Transport	Initiation, Promotion and Coordination	
		Operator(s)	Operation and Maintenance	
		Other stakeholders	Promotion	
	5 Implementation of vulnerable group integration programs	Commissioner for the Protection of Equality, Secretariat for Social Protection	Initiation, Promotion	Budget of the City of Belgrade, Donations
		Belgrade CA, Secretariat for Transport	Promotion and Coordination, Execution, Operation and Maintenance	
		Belgrade CA, Secretariat for Public Transport	Promotion and Coordination, Execution, Operation and Maintenance	
	6 Arrangement and management of traffic areas in hospital (health) complexes	Belgrade CA, Secretariat for Transport	Promotion and Coordination	Budget of the Republic of Serbia, Budget of the City of Belgrade, Public-Private Partnership
		Belgrade Land Development Public Agency	Preparation of Documentation, Execution and Supervision	
		Operator(s)	Operation and Maintenance	
		Belgrade CA, Secretariat for Public Transport	Promotion	
	1 Development of green transport corridors through existing urban and suburban spaces ("urban tissue")	Ministry of Health	Initiation	
		Belgrade CA, Secretariat for Transport	Promotion and Coordination	Budget of the City of Belgrade, Donations, Loans
		PUC Greenery Belgrade	Preparation of Documentation, Execution and Supervision, Operation and Maintenance	
		Belgrade Land Development Public Agency	Initiation	
	2 Development of walking and cycling paths within existing green spaces, parks, woods and protected areas	Belgrade CA, Secretariat for Transport	Promotion and Coordination	Budget of the City of Belgrade, Donations, Loans
		Belgrade Land Development Public Agency	Preparation of Documentation, Execution and Supervision	
		PUC Greenery Belgrade	Initiation, Operation and Maintenance	
	3 Promotion of Belgrade biodiversity in cooperation with civil society organisations	Belgrade CA, Secretariat for Environmental Protection	Promotion	Budget of the City of Belgrade, Donations
		PUC Greenery Belgrade	Initiation, Promotion	
	4 Rehabilitation of unregulated landfills, urban wastelands	Belgrade CA, Secretariat for Communal and Housing Affairs	Initiation	Budget of the City of Belgrade

Goal	Measure	Measures	Responsibilities/Resources	Competency	Funding Source
		and other unregulated habitats	PUC City Sanitation	Preparation of Documentation, Execution and Supervision, Operation and Maintenance	
7	1	Energy efficient solutions for public utility traffic (electric vehicles, LPG, CNG, etc.)	Belgrade CA, Secretariat for Communal and Housing Affairs	Initiation, Preparation of Documentation, Execution and Supervision, Operation and Maintenance	Budget of the City of Belgrade
	2	Control of emissions of pollutants and noise from motor vehicles	Belgrade CA, Secretariat for Environmental Protection Communal Police Ministry of Interior	Initiation, Promotion and Coordination, Operation Supervision Supervision	Public-Private Partnership, Budget of the City of Belgrade, Donations
	3	Stimulation of electric car use (LPG, CNG, etc.) for the needs of taxi transport and "ride share", equipping taxi stations with chargers for electric cars and forming stations for parking and charging of "ride share" vehicles	Belgrade CA, Secretariat for Transport Ministry of Finance - Tax Administration Belgrade CA, Secretariat for Investments Belgrade CA, Secretariat for Environmental Protection Belgrade CA, Secretariat for Public Transport Operator(s) Belgrade Land Development Public Agency	Promotion and Coordination Operation and Maintenance Preparation of Documentation, Execution and Supervision of the Stimulation Documentation Initiation Promotion Operation and Maintenance of Systems Preparation of Documentation, Execution and Supervision of the Systems	Budget of the Republic of Serbia, Budget of the City of Belgrade, Donations Public-Private Partnership
8	1	Developing a network of meeting points for people, connected by clear and transparent connections (line corridors)	Belgrade Land Development Public Agency City Municipalities Belgrade CA, Secretariat for Transport Belgrade CA, Secretariat for Urban Planning and Construction	Preparation of Documentation, Execution and Supervision Promotion, Operation and Maintenance Initiation Promotion and Coordination	Budget of the Republic of Serbia, Donations
	2	Creating, equipping, maintaining and managing public spaces to make them attractive and safe to use	City municipalities Belgrade CA, Secretariat for Transport PUC Greenery Belgrade Belgrade Land Development Public Agency Ministry of Interior	Initiation, Promotion and Coordination Promotion Execution, Operation and Maintenance Preparation of Documentation, Execution and Supervision Operation and Maintenance	Budget of the Republic of Serbia, Donations

Goal	Measure	Measures	Responsibilities/Resources	Competency	Funding Source
			PUC Public Lighting	Execution, Operation and Management	
			PUC City Sanitation	Execution, Operation and Management	
			PE Roads of Belgrade	Execution, Operation and Management	
	3	Development of pedestrian and integrated streets, super-blocks and spaces	<i>Elaborated under measure 1.3</i>		
	4	Relocate vehicle parking from public areas	Belgrade CA, Secretariat for Transport	Initiation	Budget of the City of Belgrade, Public-Private Partnership
			Belgrade Land Development Public Agency	Preparation of Documentation, Execution and Supervision	
			City Municipalities	Promotion and Coordination	
			Parking Service	Operation and Maintenance	
	5	City Logistics	Belgrade CA, Secretariat for Transport	Initiation, Promotion and Coordination	Budget of the City of Belgrade, Public-Private Partnership
			Communal Police	Supervision	
9	1	Planning of new facilities and their homogenous integration in all municipalities	Belgrade CA	Initiation, Promotion and Coordination	Budget of the City of Belgrade, Donations
			Belgrade Land Development Public Agency	Preparation of Documentation and Execution	
			Belgrade CA, Secretariat for Urban Planning and Construction	Supervision	
	2	Relocation of public services outside the central city zones	Belgrade CA	Initiation, Promotion and Coordination	Budget of the City of Belgrade, Donations
			Belgrade Land Development Public Agency	Preparation of Documentation and Execution	
			Belgrade CA, Secretariat for Urban Planning and Construction	Supervision	
	3	Subsidies for the construction and rental of business premises outside the central city zone	Belgrade CA	Initiation, Promotion and Coordination	Budget of the City of Belgrade, Donations
			Belgrade Land Development Public Agency	Preparation of Documentation and Execution	
			Ministry of Finance	Promotion	
			Belgrade CA, Secretariat for Urban Planning and Construction	Supervision, Operation	

\*CA - City Administration



Table 6.2. - Action plan for proposed activities – Responsibilities, competencies, funding sources

Activity Measure	Activities	Responsibility/ Resources	Competencies	Source of funds
10	1 Completion of the Inner City Ring Road	Belgrade Land Development Public Agency	Initiation, Promotion and Coordination, Preparation of Documentation, Execution and Supervision	Budget of the City of Belgrade, Loans
		Belgrade CA, Secretariat for Transport	Promotion	
		Belgrade CA, Secretariat for Investments	Coordination	
	2 Completion of the Outer Main Tangent Road with the Ada Huga bridge	Belgrade Land Development Public Agency	Initiation, Promotion and Coordination, Preparation of Documentation, Execution and Supervision	Budget of the Republic of Serbia, Budget of the City of Belgrade, Loans
		Belgrade CA, Secretariat for Transport	Promotion	
		Belgrade CA, Secretariat for Investments	Coordination	
	3 The old Sava bridge and the tunnel connection between the Sava and Danube slopes	Belgrade Land Development Public Agency	Initiation, Promotion and Coordination, Preparation of Documentation, Execution and Supervision	Budget of the City of Belgrade, Loans
		Belgrade CA, Secretariat for Transport	Promotion	
		Belgrade CA, Secretariat for Investments	Coordination	
	4 Metro	Ministry of Construction, Transport and Infrastructure, Secretariat for Public Transport	Initiation, Promotion and Coordination	Budget of the Republic of Serbia, Budget of the City of Belgrade, Loans, Public-Private Partnership
		PUC Belgrade Metro and Train	Preparation of Documentation, Execution, Supervision	
	5 Construction of public parking garages	Belgrade Land Development Public Agency	Preparation of Documentation, Execution and Supervision	Budget of the City of Belgrade, Loans, Public-Private Partnership
		Belgrade CA, Secretariat for Transport	Promotion and Coordination	
		Investment and Housing Agency	Initiation	
		Parking Service	Operation and Maintenance	
	6 Construction of parking lots with the goal of implementing the "Park and Ride" system on the peripheral terminuses	Elaborated within measure 4.2.4		
	7 Continuation of Gospodars Vučića Street - Aradska - Čingrija - Dimitrija Tucovića	Belgrade Land Development Public Agency	Initiation, Preparation of Documentation, Execution and Supervision	Budget of the City of Belgrade

Activity Measure	Activities	Responsibility/ Resources	Competencies	Source of funds
8	Pedestrian bridge connecting Ada Cigankija and New Belgrade blocks	Belgrade CA, Secretariat for Transport	Promotion and Coordination	Budget of the City of Belgrade
		Belgrade CA, Secretariat for Investments	Promotion and Coordination	
		Belgrade Land Development Public Agency	Initiation, Preparation of Documentation, Execution and Supervision	
		Belgrade CA, Secretariat for Transport	Promotion and Coordination	
		Belgrade CA, Secretariat for Investments	Promotion and Coordination	
		Belgrade CA, Secretariat for Transport	Promotion and Coordination	
	Redesign of the Zrenjanin road to the Inner City Ring Road	Belgrade CA, Secretariat for Investments	Promotion and Coordination	Budget of the City of Belgrade, Loan
		Belgrade Land Development Public Agency	Initiation, Preparation of Documentation, Execution and Supervision	
		Belgrade CA, Secretariat for Transport	Promotion and Coordination	
		Roads of Serbia Public Company PE Roads of Belgrade	Operation and Maintenance Operation and Maintenance	
10	Redesign of existing intersections into roundabouts	Belgrade Land Development Public Agency	Initiation, Preparation of Documentation, Execution and Supervision	Budget of the City of Belgrade
		Belgrade CA, Secretariat for Transport	Promotion and Coordination	
		Belgrade CA, Secretariat for Investments	Promotion and Coordination	
		Belgrade CA, Secretariat for Transport	Promotion and Coordination	
9	Educational programs and promotional campaigns	Belgrade CA, Secretariat for Transport	Initiation, Promotion and Coordination	Budget of the City of Belgrade, Donations
		Belgrade CA, Secretariat for Public Transport	Promotion and Coordination	
		Other stakeholders	Promotion and Coordination	
	1. Regulatory improvement	Belgrade CA, Secretariat for Transport	Initiation	Budget of the City of Belgrade, Donations
		Secretariat for Public Transport in cooperation with the proponents of amendments to the law in the field of safety, public transport, tax policy, etc.	Preparation of documentation, Operation and Maintenance	
		Ministry of Construction, Transport and Infrastructure	Preparation of Documentation, Operation and Maintenance	
		Ministry of Interior	Preparation of Documentation, Operation and Maintenance	
		Ministry of Finance	Preparation of Documentation, Operation and Maintenance	

Activity Measure	Activities	Responsibility/ Resources	Competencies	Source of funds
2	2. Measures for fiscal incentives	Belgrade CA, Secretariat for in cooperation with the proponents of amendments to the law in the field of safety, Secretariat for Public Transport in cooperation with the proponents of amendments to the law in the field of public transport, Secretariat for Finance in cooperation with proponents of amendments to the law in the field of tax policy, etc. Ministry of Construction, Transport and Infrastructure Ministry of Interior Ministry of Finance	Operation and Maintenance Operation and Maintenance Operation and Maintenance Initiation, Promotion and Coordination	Budget of the Republic of Serbia, Budget of the City of Belgrade, Donations
3	Development of Big data platforms for traffic data collection, new traffic studies, and/or innovation of transport models and existing databases for further development and testing of measures in the longer-term planning period	Belgrade CA, Secretariat for Transport, Secretariat for Public Transport, PUC Belgrade Metro and Train	Initiation, Promotion and Coordination, Operation and Maintenance, Preparation of Documentation	Budget of the City of Belgrade
4	Improving communication and cooperation between relevant authorities responsible for the management of the city's transport system, maintenance and construction of transport infrastructure and involvement of the local community in decision-making processes	Belgrade CA, Secretariat for Transport, Secretariat for Public Transport Ministry of Construction, Transport and Infrastructure	Initiation, Coordination, Maintenance Coordination, Maintenance	Budget of the City of Belgrade, Donations
5	Support for the development of SUMP in urban (and suburban municipalities)	Belgrade CA City Municipalities (Surčin, Obrenovac, Barajevo, Lazaravac, Sopot, Mladenovac, Grocka) Belgrade CA, Secretariat for Transport Belgrade CA, Secretariat for Public Transport	Initiation, Promotion and Coordination Preparation of Documentation, Execution and Supervision Operation and Maintenance Operation and Maintenance	Budget of the City of Belgrade, Donations

\*CA - City Administration



## ACTION PLAN AND BUDGET

Action plans represent the elaboration of actions that lead to the implementation of adopted measures and activities. Their dynamics and financial plans are adjusted to the organizational and financial possibilities of the city. The action plan is harmonized with the short- and medium-term programs of the competent city institutions that need to implement certain segments of the proposed action plans. The Action Plan for the Implementation of the Sustainable Urban Mobility Plan (hereinafter: the Action Plan) specifies individual activities (measures) defined by principles and goals, elaborates implementation methods, deadlines, resources - responsible parties, monitoring instruments and indicators of progress. This document (all action plans) consists of action plans provided for each of the proposed measures. Successful implementation of the planned activities presupposes active participation and coordination of city secretariats, public companies, ministries and other participants that are relevant and socially responsible for the implementation of the Sustainable Urban Mobility Plan. For all the identified activities, the competent city secretariats, ministries, institutions or bodies will develop detailed activities necessary for their implementation, i.e. provide appropriate documentation, within their scope and competence. Further elaboration of the proposed action plans will take place through the development of documentation that should provide conditions for the implementation of each individual action plan. The basis for monitoring the implementation of the Sustainable Urban Mobility Plan and the evaluation of the Action Plan are the monitoring indicators identified in this report. The Action Plan does not determine the nominal amounts of funds for the implementation of defined activities, but it is assumed that the largest possible source of funding will be used.

Table 6.3. – Action plan - Estimate, cost structure, time frame of planned measures

Goal	Measure	Investment <sup>***</sup> by 2023		Investment <sup>***</sup> by 2028		Investment <sup>***</sup> by 2031	
		activity	(€)	activity	(€)	activity	(€)
1	1. Improving existing pedestrian infrastructure	10 km	500.000	30 km	1.500.000	20 km	1.000.000
	2. Improving connections with other modes of transport	documentation	200.000	saration	2.000.000	construction	3.000.000
	3. Developing pedestrian and integrated roads, super-blocks and spaces	documentation	300.000	reconstruction	50.000.000	reconstruction	30.000.000
2	1. Cycling network development (paths, lanes, parking lots)	documentation and construction of 145 km	8.000.000	documentation and construction of 95 km	5.000.000	documentation and construction of 265 km	17.000.000
	2. Improving the existing cycling infrastructure	reconstruction, revitalization 20 km	300.000	reconstruction, revitalization 50 km	750.000	reconstruction, revitalization 40 km	600.000

Goal Measure	Measures	Investment*** by 2023		Investment*** by 2028		Investment*** by 2031	
		activity	(€)	activity	(€)	activity	(€)
3	Implementing a public bicycle system (Bike sharing)	150 stops	3.000.000	operating costs	750.000	operating costs	750.000
4	Enabling bicycle transport within vehicles of the city's public transport system	10 vehicles	50.000	30 vehicles	150.000	50 vehicles	250.000
5	Promoting cycling tourism, realisation of Eurovelo routes and bed&bike	campaign	100.000	campaign	500.000	campaign	300.000
3 1	Development and improvement of the structure and operation of the entire public transport system	documentation*	1.000.000	**	800.000.000	**	500.000.000
2	Development and improvement of high-capacity public transport rail subsystems	documentation	1.500.000	22 km	200.000.000	38 km	600.000.000
3	Development of public transport subsystems on the rivers	documentation	100.000	4 docks, 2 boats	1.500.000	4 docks, 2 boats	1.500.000
4 1	Development of e-mobility services (public transport and micro-mobility sectors)	documentation	200.000	Public-Private Partnership Implementation	10.000.000	Public-Private Partnership Implementation	10.000.000
2	1. Car sharing	documentation	100.000	Public-Private Partnership Implementation	2.500.000	Public-Private Partnership Implementation	2.500.000
	2. Car pooling	documentation, app, campaign	150.000	campaign, maintenance	20.000	campaign, maintenance	20.000
	3. Bike&ride	documentation, campaign, implementation at 3 BG voz stations	50.000	documentation, campaign, implementation at 8 BG voz stations	100.000	implementation at 8 terminals	80.000

Goal	Measure	Investment*** by 2023		Investment*** by 2028		Investment*** by 2031	
		activity	(€)	activity	(€)	activity	(€)
	4 Park&ride	documentation, campaign, implementation at 3 B.G.voz stations	300.000	documentation, campaign, implementation at 8 B.G.voz stations and public transport terminuses	800.000	documentation, campaign, implementation at 3 B.G.voz stations and public transport terminuses	300.000
	3 Development of the MaaS (Mobility-as-a-Service) concept	documentation, campaign, pilot project	500.000	development of the concept and system	500.000	development of the concept and system	500.000
	4 Parking demand management	documentation	150.000	implementation	200.000	implementation	200.000
5	1 Public space safety	documentation	50.000	implementation at 7 locations	700.000	implementation at 15 locations	1.500.000
	2 Improving safety and security of pedestrians and other unimotorised traffic participants	documentation	80.000	implementation at 20 locations	300.000	implementation at 30 locations	450.000
	3 Adjusting existing infrastructure and improving accessibility for vulnerable user categories	documentation	100.000	implementation at 8 locations	120.000	implementation at 10 locations	150.000
	4 Adjusting the public transport system according to the needs of vulnerable groups	documentation	50.000	implementation at 10 locations	200.000	implementation at 20 locations	400.000
	5 Implementation of vulnerable group integration programs	documentation	50.000	campaigns and apps	100.000	campaigns and apps	100.000
	6 Arrangement and management of traffic areas in hospital (health) complexes	documentation	100.000	implementation at 2 locations	600.000	implementation at 3 locations	900.000
6	1 Development of green transport corridors through existing urban and suburban spaces ("urban tissue")	documentation	60.000	implementation at 3 locations	450.000	implementation at 2 locations	300.000



Goal Measure	Measures	Investment*** by 2023		Investment*** by 2028		Investment*** by 2031	
		activity	(€)	activity	(€)	activity	(€)
2	Development of walking and cycling (combined - rollerblades, scooters) paths within existing green spaces, parks, woods, and protected areas	documentation	80.000	25 km	1.500.000	25 km	1.500.000
3	Promotion of Belgrade biodiversity in cooperation with civil society organisations - popularisation of their existing activities and encouragement of new initiatives	documentation and campaign	50.000	documentation and campaign	70.000	documentation and campaign	60.000
4	Rehabilitation of unregulated landfills, urban wastelands and other unregulated habitats	documentation and implementation	80.000	implementation	100.000	implementation	100.000
7 1	Energy efficient solutions for public utility traffic (electric vehicles, LPG, CNG, etc.)	documentation	100.000	Fleet replacement 50 vehicles	2.000.000	fleet replacement 100 vehicles	5.000.000
2	Control of emissions of pollutants and noise from motor vehicles	legal provisions	0	legal provisions	0	legal provisions	0
3	Stimulation of electric car use (LPG, CNG, etc.) for the needs of taxi transport and "ride share", by equipping taxi stations with chargers for electric cars and by forming stations for parking and charging of "ride share" vehicles	documentation	50.000	stimulation per vehicle	7.000	stimulation per vehicle	7.000
8 1	Developing a network of meeting points for people, connected by clear and transparent connections (line corridors)	documentation	100.000	linear park along the Danube	20.000.000	other linear corridors	15.000.000

Goal	Measure	Investment*** by 2023		Investment*** by 2028		Investment*** by 2031	
		activity	(€)	activity	(€)	activity	(€)
	2 Creating, equipping, maintaining and managing public spaces to make them attractive and safe to use	documentation	100 000	urban pockets	20 000 000	urban pockets	15 000 000
	3 Development of pedestrian and integrated streets, super-blocks and spaces	see under 1.3					
	4 Relocate vehicle parking from public areas	documentation	1 000 000	construction of 2 parking garages in New Belgrade	15 000 000	construction of 2 parking garages on the perimeter of the city centre	15 000 000
	5 City logistics	documentation	200 000	under centre area	3 000 000	city	3 000 000
9	1 Planning of new facilities and their homogenous integration in all municipalities	changes to Belgrade GUP	2 000 000	Preparation of PGR	5 000 000	realization	50 000 000
	2 Relocation of public services outside the central city zones	changes to Belgrade GUP	1 000 000	Preparation of PGR	5 000 000	realization	50 000 000
	3 Subsidies for construction and rental of business premises outside the central city zone	documentation	200 000	realization	850 000	realization	850 000

\* Strategy for the development of public transport in Belgrade until 2033.

\*\* Investments in system structure (vehicles, infrastructure, energy, network, etc.)

\*\*\* These are expert estimates and the documentation should further define precise costs

Table 6.4. – Action Plan - Estimate, cost structure, time frame of planned activities

Goal	Act.	Activity	Investment *** by 2023.		Investment *** by 2028.		Investment *** by 2031.	
			activity	(€)	activity	(€)	activity	(€)
10	1	Completion of the Inner City Ring Road	documentation	4.000.000	Topčider tunnel and sector 3	130.000.000	sectors 4 и 5	370.000.000
	2	Completion of the Outer Main Tangent Road with the Ada Huga bridge	documentation	15.000.000	southern sector	330.000.000	eastern sector and Ada Huga bridge	600.000.000
	3	The old Sava bridge and the tunnel connection between the Sava and Danube slopes	documentation	6.000.000	bridge	150.000.000	tunnel	60.000.000
	4	Metro	documentation	2.000.000	17 km	1.900.000.000	13 km	1.500.000.000
	5	Construction of public parking garages	documentation	850.000	construction of 4 garages	28.000.000	construction of 3 garages	20.000.000
	6	Construction of parking lots with the aim of implementing the "Park and Ride" system on peripheral terminuses	see under 4.2.4					
	7	Continuation of Gospodara Vučića Street - Aradska - Čingrija - Dimitrija Tucovića	documentation	800.000	construction	40.000.000	-	0
	8	Pedestrian bridge connecting Ada Ciganlija and New Belgrade blocks	documentation	150.000	construction	5.000.000	-	0
	9	Redesign of the Zrenjanin road to the Inner City Ring Road	documentation	300.000	realization	15.000.000	-	0
	10	Redesign of existing intersections into roundabouts	documentation and reconstruction of 4 intersections	400.000	documentation and reconstruction of 8 intersections	1.000.000	documentation and reconstruction of 6 intersections	800.000
0	1	Educational programs and promotional campaigns	5 campaigns per year	200.000	5 campaigns per year	500.000	5 campaigns per year	300.000
	2	1. Regulatory improvement	documentation (proposed amendments)	30.000	documentation (proposed amendments)	60.000	documentation (proposed amendments)	50.000



Goal Act.	Activity	Investment*** by 2023.		Investment*** by 2028.		Investment*** by 2031.	
		activity	(€)	activity	(€)	activity	(€)
	2. Measures for fiscal incentives	documentation	300.000	implementation	2.000.000	implementation	2.000.000
3	Development of Big data platforms for traffic data collection, new traffic studies, and/or innovation of transport models and existing databases for further development and testing of measures in the longer-term planning period	transport model	2.000.000	updating of the transport model and other databases	3.000.000	updating of the transport model and other databases	3.000.000
4	Improving communication and cooperation between relevant authorities responsible for the management of the city's transport system, maintenance and construction of transport infrastructure, capacity building, involvement of the local community in decision-making processes	workshops, trainings, apps, etc.	50.000	workshops, trainings, apps, etc.	50.000	workshops, trainings, apps, etc.	50.000
5	Support for the development of Sustainable Urban Mobility Plans in urban municipalities that are outside the boundaries of the General Plan of Belgrade	Sopot and Lazarevac	150.000	Obrenovac, Grocka and Mladenovac	450.000	Surčin and Barajevo	150.000

\*\*\* These are expert estimates and the documentation should further define precise costs

## THE PLAN AND SEQUENCE OF IMPLEMENTATION OF MEASURES

The plan and sequence of the implementation of measures and activities is defined based on the impact of the defined measures on the achievement of goals defined within the previous phase of the project, and the time period required for the implementation of each of these measures. The impact of measures on the realization of goals is defined on the basis of expert analysis. The methodology of the expert analysis is defined in Chapter 7. In addition to the plan and sequence of the implementation of measures and activities in order to achieve the defined goals, it should be noted that the implementation of some of these measures and activities requires a period longer than 10 years, i.e. longer than the planning period, which means that the activities regarding their implementation will continue after the end of the planning period.

Table 6.3. - "Gantt Chart" of measure implementation

Goal	Measure	Measures	Measure Impact	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
1	1	Improving existing pedestrian infrastructure	603	---	---	---					---			
	2	Improving connections with other modes of transport	476	---	---						---			
	3	Developing pedestrian and integrated roads, super-blocks and spaces	353	---	---						---			
2	1	Cycling network development (paths, lanes, parking lots)	1210	---	---	---					---			
	2	Improving the existing cycling infrastructure	873											
	3	Implementing a public bicycle system (Bike sharing)	446											
	4	Enabling bicycle transport within vehicles of the city's public transport system	497											
	5	Promoting cycling tourism, realisation of Eurovelo routes and bed&bike	175	>>	>>	>>	>>	>>	>>	>>	>>	>>	>>	>>
3	1	Development and improvement of the structure and operation of the entire public transport system	875	---	---	---					---			
	2	Development and improvement of high-capacity public transport rail subsystems	917	---	---	---					---			
	3	Development of public transport subsystems on the rivers	360	---	---	---					---			
4	1	Development of e-mobility services (public transport and micromobility sectors)	540	---	---	---					---			
	2	1. Car sharing	415	---	---	---					---			
	2	2. Car pooling	467	---	>>		>>		>>		>>		>>	

Goal	Measure	Measures	Measure impact	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
	2	3. Bike&ride	869	---	---	---	---	>>	---	---	>>	---	---	---
	2	4. Park&ride	1044	---	---	---	---	>>	---	---	>>	---	>>	---
	3	Development of MaaS (Mobility-as-a-Service) concept	884	---	---	---	---	>>	---	---	>>	---	>>	---
	4	Parking demand management	1022	---	---	---	---	---	---	---	---	---	---	---
5	1	Public space safety	891	---	---	---	---	---	---	---	---	---	---	---
	2	Improving safety and security of pedestrians and other unmotorised traffic participants	1222	---	---	---	---	---	---	---	---	---	---	---
	3	Adjusting existing infrastructure and improving accessibility for vulnerable user categories	743	---	---	---	---	---	---	---	---	---	---	---
	4	Adjusting the public transport system according to the needs of vulnerable groups	736	---	---	---	---	---	---	---	---	---	---	---
	5	Implementation of vulnerable group integration programs	140	---	---	---	---	---	---	---	---	---	---	---
	6	Arrangement and management of traffic areas in hospital (health) complexes	368	---	---	---	---	---	---	---	---	---	---	---
6	1	Development of green transport corridors through existing urban and suburban spaces	504	---	---	---	---	---	---	---	---	---	---	---
	2	Development of walking and cycling (combined - rollerblades, scooters) paths within existing green spaces, parks, woods, and protected areas	679	---	---	---	---	---	---	---	---	---	---	---
	3	Promotion of Belgrade biodiversity in cooperation with civil society organisations - popularisation of their existing activities and encouragement of new initiatives	75	---	---	---	---	>>	---	---	>>	---	>>	---
	4	Rehabilitation of unregulated landfills, urban wastelands and other unregulated habitats	183	---	---	---	---	---	---	---	---	---	---	---
7	1	Energy efficient solutions for public utility traffic (electric vehicles, LPG, CNG, etc.)	120	---	---	---	---	---	---	---	---	---	---	---
	2	Control of emissions of pollutants and noise from motor vehicles	135	>>	>>	>>	>>	>>	>>	>>	>>	>>	>>	>>
	3	Stimulation of electric car use (LPG, CNG, etc.) for the needs of taxi transport and "ride share", by equipping taxi stations with chargers for electric cars and by forming	109	---	---	---	---	---	---	---	---	---	---	---



Goal	Measure	Measures	Measure impact	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
		stations for the parking and charging "ride share" vehicles												
8	1	Developing a network of meeting points for people, connected by clear and transparent connections (line corridors)	380	...		...					...			
	2	Creating, equipping, maintaining and managing public spaces to make them attractive and safe to use	840	...		...					...			
	4	Relocate vehicle parking from public areas	831	...	...						...			
	5	City logistics	196	...		...					...			
9	1	Planning of new facilities and their homogenous integration in all municipalities	571	...	...	...	...	...	...	...				
	2	Relocation of public services outside the central city zones	441	...	...	...	...	...	...	...				
	3	Subsidies for construction and rental of business premises outside the central city zone	293	...	...									

#### Legend:

...	documentation (urban planning, technical, studies, research, etc.)
>>	campaign
	works (construction, arrangement, reconstruction, etc.)
	implementation
	operating costs
	vehicles (new, replacement, equipping, etc.)
	subventions
	system structure (vehicles, infrastructure, energy, network, etc.)



## **MONITORING, EVALUATION**

# **7.**





## MONITORING AND EVALUATION OF THE PLAN

The monitoring and evaluation plan is an integral part of the SUMP planning cycle (step 8) that is implemented during the development of the plan. Monitoring is a periodically repetitive process, limited in time, but also selective. The depth and breadth of the monitoring and surveillance process is also limited by the level of detail of the SUMP. On the other hand, evaluation is an assessment of what was achieved regarding SUMP in a certain period of time, depending on the goals that were set.

Within this phase are defined the main monitoring and evaluation activities which should be adopted by key and wider stakeholders, and monitored during the implementation of the SUMP within specific time frames. The monitoring and evaluation plan ensures the successful completion of goals and measures during the implementation of the SUMP. The monitoring and evaluation plan defines the procedures for:

- how, when and which monitoring and evaluation activities will be performed,
- who is responsible for their performance, and
- what resources are necessary for their performance.

This plan should be subject to modifications and adjustments during the phases of SUMP implementation to account for unforeseen changes during the process.



*SUMP planning process*

## ORGANISATION OF MONITORING AND EVALUATION

The monitoring and evaluation plan was developed according to CIVITAS Guidelines "Applied framework for evaluation in CIVITAS PLUS II" (2013) which is designed to maximize the benefits of monitoring and evaluation activities and minimize the risks and impacts of potential barriers. This plan was designed taking into account the local conditions in Belgrade, in terms of available data and resources for their monitoring. Guided by the CIVITAS Guidelines "Applied framework for evaluation in CIVITAS PLUS II" (2013), the monitoring and evaluation plan defined by the guidelines is divided into 3 segments:

1. Self-assessment
2. Impact assessment
3. Process evaluation

**1. Self-assessment tool.** This is a simple and comprehensive tool for assessing the quality of the SUMP preparation process to the point where it is approved for implementation. It is basically a questionnaire of 100 "yes-no" questions that follow the steps from the SUMP preparation cycle and mainly focus on whether the action or activity relevant to the preparation of the SUMP has been carried out or not. It is designed to be implemented immediately after the SUMP has been approved and adopted. The questionnaire is filled in online, where after it is completed the total value out of 100 is calculated.

**2. Impact assessment.** Assessment of the impact of measures on the achievement of objectives is possible through the selection of relevant indicators whose changes can be measured at different time intervals. Continuous monitoring of changes in the traffic system of Belgrade also aims at early detection of possible deviations of SUMP implementation from the defined goals and, if necessary, defining actions to combat them. For this purpose, it is necessary to define indicators to enable the registering and monitoring of changes.

In the process of selecting the indicators the working team, used the experiences of other cities, the peculiarities of Belgrade and its transport system, to make a proposal of indicators for monitoring SUMP. Covering the thematic scope of SUMP to the highest degree possible, as well as the availability of data were decisive in the selection of appropriate indicators. This proposal was discussed with the task force, taking into account a number of factors such as relevance, accuracy, importance, credibility, ease of measurement and understanding. Subsequently, a list of 45 indicators was adopted.

### 1. Economic efficiency indicators (10):

- a. average car travel time
- b. public transport reliability
- c. traffic flow (vehicle/km and vehicle/hr in the network)
- d. time loss in network/in intersections
- e. LoS in network/intersections
- f. length of newly constructed roads (km)
- g. length of new public transport routes (km)
- h. public transport vehicle speed (transport, operating)
- i. percentage of exchange of daily trips between municipalities
- j. GDP at the municipal level

	Self-assessment	Impact Assessment (Monitoring)	Process Evaluation
Relevant SUMP phase	SUMP phases 1-9	SUMP phase 10 and 11	SUMP phase 10 and 11
Purpose	SUMP preparation quality assessment	Assessment of impact of the measures implemented on goals	Evaluation of measure implementation success
Methodology	Questionnaire with 100 Yes/No questions	Measurement of defined indicators	By use of questionnaires, organized interviews, forums, etc.
Realization time-frame	Immediately after SUMP adoption	Continual monitoring of indicators (monthly, annual,...) depending on type. If research is done, a longer time frame is possible.	After measure implementation
Report	Submitted to the Task Force after online questionnaire is completed	Annual reports to Task Force Five-year report to Task Force (2026.) SUMP Final Report (2031.)	

*SUMP Monitoring and Evaluation*

2. Environmental Indicators (12):

- a. carbon dioxide emissions
- b. ground-level ozone concentration
- c. sulfur dioxide concentration
- d. carbon monoxide concentration
- e. nitric oxide concentration
- f. PM10 concentration



- g. PM2,5 concentration
  - h. noise level
  - i. number of hybrid and electric cars
  - j. number of electric charging stations
  - k. number of "shared bike" stops
  - l. number of "shared cars"
3. Accessibility and social inclusion indicators (19):
- a. share of walking in total number of trips
  - b. share of bicycles in total number of trips
  - c. share of cars in total number of trips
  - d. share of public transport (by subsystem) in total number of trips
  - e. share of "shared cars" in total number of trips
  - f. share of "shared bikes" in total number of trips
  - g. length of newly constructed bicycle paths (km)
  - h. length of newly constructed/reconstructed sidewalks (km)
  - i. length of newly constructed/reconstructed footpaths (km)
  - j. number of vehicles with access for people with special needs
  - k. number of constructed/reconstructed underground passages, pedestrian walkways and elevators
  - l. reachability by public transport
  - m. number of inhabitants with public transport routes within 10-minute walking distance
  - n. number of locations in public areas where barriers to people with special needs have been removed
  - o. number of car parking lots and their utilization
  - p. number of bicycle parking lots and their utilization
  - q. number of "park and ride" locations
  - r. number of "bike and ride" locations
  - s. number of newly constructed/equipped bed and bike centers
4. Quality of life indicators (3):
- a. length of ordered paths within existing green areas
  - b. length (surface) of traffic calming zones
  - c. number of schools with completed "School zone" projects
5. Safety indicators (1):
- a. number and structure of traffic accidents

For each of the indicators, the plan defines the time frame in which it is collected, the institution responsible for data collection, the institution responsible for data processing and whether additional funds are needed for collection. Each of the indicators is related to some of the defined goals of SUMP and its monitoring enables the monitoring of the achievement of a specific goal. A prerequisite for successful monitoring is the cooperation of different data owners and the periodic updating of data. To this end, a convention on the collection, transmission and processing of data on indicators should be defined.

**3. Process evaluation.** The main goal of the process evaluation is to gain new knowledge about factors for success and strategies for overcoming possible barriers during the implementation phase. Process assessment should be carried out both at the level of the "bundle of measures" and at the level of the individual measure. Process assessment is related to the typical phases of project implementation, known as the investment cycle, which can be classified into three time periods: a) Preparation phase, b) Application phase, and c) Operation phase



*SUMP Realization Phases*

It is proposed that the evaluation of the Belgrade SUMP be performed every 3 years. The process envisages questionnaires and interviews to be conducted in pre-defined phases. In particular, all bundles of measures should be assessed in the same way after the completion of each of the three phases, by gathering information based on a questionnaire called the measure assessment form. This form should be completed by the person responsible for implementing the measure. The assessment of "focused" concrete measures will consist of additional interviews at the end of each phase of the project. This should be done by conducting at least 3 interviews with key stakeholders.

## REPORTING METHOD, ANALYSIS AND EVALUATIONS

SUMP evaluation is carried out on the basis of available data. For reporting on the results of evaluation and monitoring, different representations will be applied depending on the nature of the parameters being described and the need for further analysis, and they can be:

- A tabular overview of quantitative data;
- Graphs (histograms) for comparative review of quantitative data;
- Maps displaying geographical locations;
- Photos and videos showing certain situations with terrains and statuses before and after the implementation of the SUMP measure;
- Qualitative descriptions when a detailed explanation of certain situations; data, work results, etc. is needed.

Data analysis methods and techniques also differ depending on what type of information should be used, as follows:

- Descriptive statistics - used to describe the data collected during research in tabular and/or graphical form, showing trends of changes in status over time;
- Trend assessment based on regression analyses;
- Applying the "Brainstorming" method to analyze all the data obtained, in order to ensure a comprehensive analysis and the active participation of all participants.

The evaluation methods used in the assessment of the SUMP should provide answers to the following key questions:

1. Has the SUMP been implemented as planned?
2. Did the achieved results applied through SUMP justify the invested funds?
3. Are the improvements achieved in the economic, social and environmental fields the result of the implementation of the measures defined by the SUMP?
4. Which measures included in the SUMP are more and which are less effective?
5. Should a SUMP be prepared for the subsequent time frame?
6. Has the population felt any benefits from SUMP implementation?

The analysis of the above can be done by a combination of the following methods:

1. Cost-benefit analysis in order to determine and evaluate the financial effects of the implementation of SUMP on the basis of analyses of actual costs (costs) and actual benefits (benefits).
2. The MCDM (multi criteria criteria decision making) method, as very suitable for ranking solutions by importance based on evaluation with the previously defined criteria, will be used in case the cost-benefit analysis has not specified the data necessary for certain parts of the SUMP. For example, this is used to assess the significance of measures in relation to a determined goal or the success of the measure's implementation, when it is not visible from the cost-benefit analysis. In this case, AHP, PROMETEE or TOPSYS multi-criteria ranking methods will be applied.
3. The Brainstorming method will be used for evaluating the success of the implementation phases of SUMP, when it is not possible to get an answer by applying the cost-benefit analysis and MCDM method. The task force and stakeholder representatives are involved in the application of the Brainstorming method.

In addition, the monitoring and evaluation plan includes periodic reporting on the status of the process. The purpose of reporting is to provide information to assist the SUMP implementation team and stakeholders in comparing performance with plans. In this way it is possible to:

- analyze and mitigate current or potential problems,
- improve the monitoring process, and
- ensure that the decision-making process is well supported.

Four (4) main kinds of reports are required as follows: a quarterly progress report, annual monitoring reports, mid-term assessments (2026) and an end of project report (2031). The monitoring and evaluation plan includes a framework of guidelines for the activities required during its implementation, such as staffing requirements, estimated data collection costs, information, and an analytical schedule of M&E activities over time. An evaluation of the SUMP should be done every 3 years and an evaluation report submitted to the Monitoring Task Force.



## PRESENTATION OF RESULTS

Presenting the results of monitoring and evaluation of SUMP to stakeholders and citizens is an important phase in SUMP implementation. The presentation of the results should be guided by the following:

- Information presented to be clear and concise;
- Data, having been processed by the appropriate methods and techniques as described herein, to be presented in relation to the determined goals and appropriate methods and techniques of reporting;
- All data must be publicly available. They are to be presented to citizens and stakeholders and published on social networks, portals, newspapers, etc.;
- It is desirable to use visual effects in order to draw attention to important data.

All data are published in an open format on the national open data platform <https://data.gov.rs/sr/>

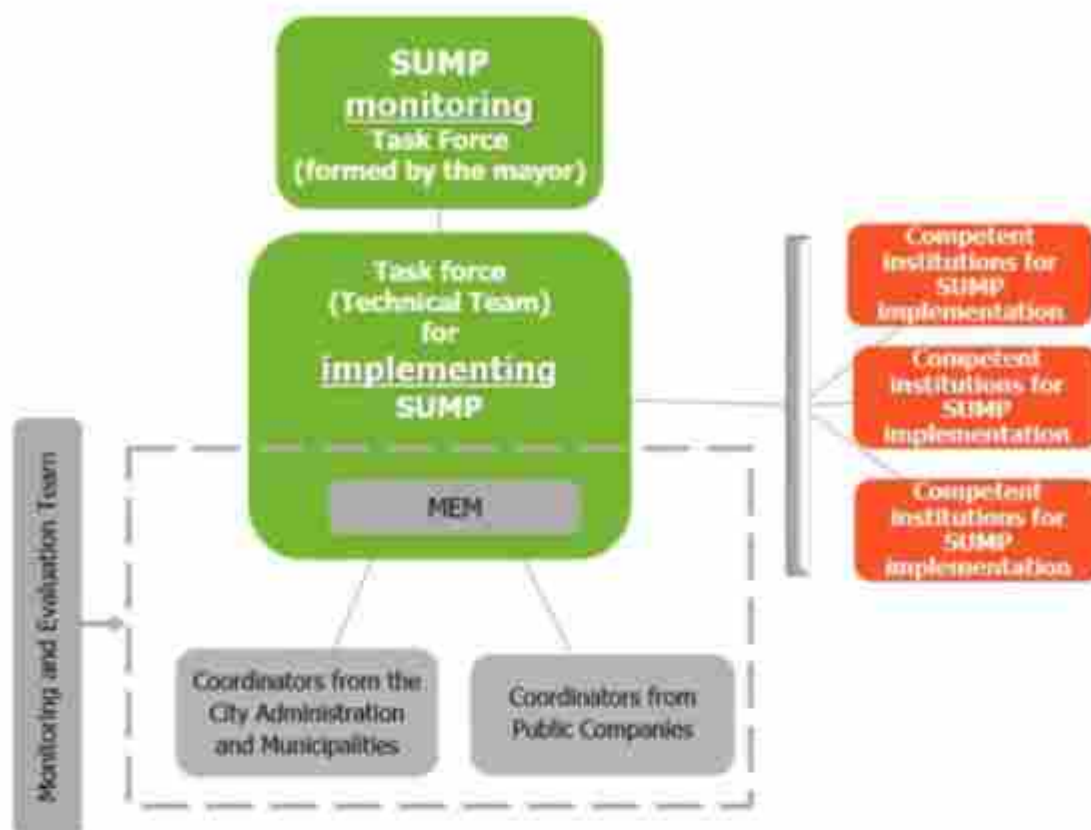
## ORGANIZATIONAL STRUCTURE AND STAKEHOLDERS

The primary authority concerning the implementation of SUMP monitoring and evaluation procedures rests with the Belgrade Secretariat for Transport. A person will be appointed in the Secretariat for Transport in charge of coordinating the monitoring and evaluation of the process. Employees of the Secretariat for Transport will initiate the measures and activities envisaged for individual SUMP measures, and therefore also the activities of monitoring and evaluation. Other stakeholders in this process, such as secretariats for public transport, utilities and housing, investments, environmental protection, Belgrade Roads, Belgrade Land Development Public Agency, municipalities, etc. will, in the course of the implementation and monitoring of SUMP, provide feedback on the success of its implementation. Achieving the goals defined by the SUMP requires active and coordinated effort of all stakeholders in this process. From the very beginning of the SUMP implementation project, a number of stakeholders have been involved, namely: the Ministry of Transport, representatives of non-governmental organizations, public transport operators, representatives of the academic community, etc. These same stakeholders will be actively involved in the monitoring and evaluation of the SUMP, which will require transparency, effectiveness and efficiency in its implementation.

Achieving cooperation regarding the SUMP would involve the following:

- Appointment of representatives of municipalities and ministries
- Establishment of a technical team for implementation and monitoring
- Formation of task forces for individual projects (optional)
- Coordinated monitoring of the implementation of the plan
- Work on the concretization of action plan measures through individual future projects
- Involvement of a larger number of people familiar with the project subject matter.

The implementation and oversight of monitoring and evaluation activities requires the establishment of a monitoring team consisting of: SUMP Monitoring and Evaluation Managers (MEMs) and coordinators who should represent different municipalities or stakeholders within the research area. The organizational structure of the monitoring team is shown in the following diagram.



*Organisational structure of the monitoring team*

The task force for SUMP implementation monitoring should be formed by the Mayor of Belgrade and should consist of the following members:

1. Mayor/Deputy Mayor
2. Chief Urban Planner
3. Secretary of Transport
4. Secretary for Environmental Protection
5. Secretary for Public Transport
6. Secretary for Urban Planning

The task force monitors the work of the implementation task force through quarterly and annual progress reports and adopts SUMP evaluation reports. The implementation task force - technical team, consists of:

1. Competent institutions for the implementation of the plan, which implement certain measures on the basis of the adopted action plan;

- a. Secretariat for Transport
  - b. Secretariat for Utilities and Housing Services
  - c. Secretariat for Public Transport
  - d. Secretariat for Investments
  - e. PE Roads of Belgrade
  - f. Belgrade Land Development Public Agency
2. Coordinators, who on behalf of their institutions monitor the implementation of the plan and prepare the data necessary for monitoring and evaluation of the plan:
  - a. From city municipalities
  - b. From city public companies
  - c. From the city administration
3. Plan evaluation team, composed of external, impartial experts who will, on the basis of the data collected regarding the indicators of the achievement of the plan's goals, perform an expert evaluation of the implementation of the plan, prepare a written report and submit it to the M&E Manager (monitoring and evaluation).
4. The M&E Manager, who collects the necessary data for monitoring and evaluation from the implementing institutions and the coordinators, coordinates the work of the implementation task force, prepares quarterly and annual progress and monitoring reports. Together with the evaluation team, he/she prepares the Evaluation Reports and submits them to the Monitoring Task Force for adoption.

The implementation task force should meet quarterly, unless there is a need for more frequent meetings during the implementation of a certain measure, which can be regulated by the Rules of Procedure of this body. The Rules of Procedure should also define the manner and methods by which a measure is monitored. Task forces dedicated to the measure (if formed) should prepare an implementation report and submit to the implementation task force for consideration and adoption. The Implementation Task Force should prepare quarterly reports and an annual report on the implementation of the plan and submit them to the Implementation Monitoring Task Force. Reporting on progress as part of annual performance monitoring will help ensure that the work of project users and other stakeholders will be clearly and regularly presented to the population, and can also be used to inform regarding decisions that have been made and future investment priorities.

## COMMITMENT TO THE IMPLEMENTATION OF PLANNING ACTIVITIES

To ensure the consistency of SUMP monitoring, coordinated monitoring of the implementation of the plan should be provided by appointing representatives of stakeholders, public companies, municipalities and ministries. For this purpose, we propose signing a stakeholder cooperation memorandum (Annex: Proposal of Memorandum for SUMP Implementation and Monitoring Cooperation). The subject of the Memorandum is an official establishment of cooperation between all stakeholders in the implementation of the plan and monitoring SUMP results. The Cooperation Memorandum signatories should also provide professional and political support to the implementation, monitoring, development and improvement of SUMP.



## PLAN QUALITY ASSESSMENT

Quality Assessment of the Sustainable Urban Mobility Plan will unfold in two phases:

1. The first phase immediately after the completion of the plan, consisting of the following:
  - Prepare an appropriate number of printed materials with a draft plan.
  - Present the Draft Plan to the Planning Commission of the Belgrade City Assembly.
  - Prepare material for presentation before the city assembly (city council).
  - SUMP prepared in the form of publications and printed in 100 copies should be submitted to the relevant city institutions.
2. Following these activities, and once it has been adopted by the City Assembly, the plan will be implemented.

From the beginning of plan implementation it will be accompanied by continual monitoring and evaluation. Following the monitoring and evaluation completion the Evaluation Team and Monitoring and Evaluation Manager prepare a report on the evaluation and quality of the implemented plan (as described in the previous chapter) and submit this report to the task force.

СКУПШТИНА ГРАДА БЕОГРАДА  
Број: 34-833/20-С – 18. децембар 2020. године

ПРЕДСЕДНИК  
Никола Никодијевић, с.р.

Доставити:

- Секретаријату за саобраћај
- Субјектима надлежним за спровођење Плана, преко Секретаријата за саобраћај
- Секретаријату за скупштинске послове и прописе
- Писарници

30. Јануар 2021. године  
за јачину отправку  
заменику председника Градске управе  
Београда – секретар Секретаријата за  
скупштинске послове и прописе  
Наташа Ђукић



**ANNEX**





## GLOSSARY OF TERMS

term	meaning
Availability	Availability is the distance of an element from other significant areas of settlements, buildings, areas, contents or activities. Distances can be expressed in relation to different modes of trip (air, car, bicycle, pedestrian, etc.)
"Zone 30"	Part of a road, street or settlement in which the speed of vehicles is limited to 30 km/h
Slow zone	Part of a road, street or community in which the road is used by pedestrians and vehicles in such a way that the vehicles do not interfere with the trip of pedestrians and cyclists, i.e. at the speed of pedestrians; and a maximum of 10 km/h
Sustainable Urban Mobility	Trip of people so that the needs of the individual, the business sector, and society as a whole are met safely and in a way that supports the health of humans and the ecosystem, promotes generational equality, provides accessibility, equity and efficiency, offers a choice of modes of transport and supports a competitive economy and balanced regional development - limiting emissions and waste, using renewable energy sources, reducing noise and inefficient land use
Sustainable Development	Harmonization of economic, social and environmental aspects of development; rational use of non-renewable resources and providing conditions for greater use of renewable resources, which enables current and future generations to meet their needs and improve the quality of life
Pedestrian zone	Part of the road, street or community on which only pedestrian traffic is allowed
Accessibility	The ease with which one can reach a destination, which depends on the volume and quality of the traffic infrastructure and services
Super-block	Urban space bounded by segments of the primary street network that form a polygon or urban area that contains several blocks of the existing urban structure. This new "urban cell" has both an internal and an external traffic component. The internal street network is closed to vehicles and is primarily intended for non-motorized trips of residents. The external street network belongs to the basic city street network, the grid is about 400 m and is intended for motor traffic.

term	meaning
Urban Mobility	<p>i. Trip of people between different parts of the city</p> <p>ii. A balanced relationship of different modes of transport and the basis for sustainable modes of transport in cities</p>
Bike sharing	Public bicycle sharing system with monetary compensation to the operator
Car pooling	Ride sharing system, i.e. driving together in the same car without monetary compensation or with a "subsidy/reward" proposed by the vehicle owner without making a profit
Car sharing	Public passenger car sharing system, i.e. car sharing for a fee to the operator
Carpoolers	People sharing a ride in the same car
Collaborative consumption	Shared use of goods/services
MaaS - Mobility as a Service	A way of providing transport service, which enables users a personalized package of multimodal mobility services (car sharing, public transport, taxi, bicycle, etc.) in a fully integrated way
Ride sharing	Ride sharing system (taxi, Uber, Lyft, CarGo, etc.) where drivers work on the same principle as a taxi, and the vehicle is booked in real time via the Internet or via the application
Sharing economy	Economy featuring sharing assets or services between individuals, free of charge or for a fee
Sharing mobility/shared mobility/shared-use mobility	Shared use of a vehicle
Transport Demand Management	Management a more efficient use of transportation

## GLOSSARY OF INDICATORS FOR SUMP MONITORING

indicator	definition
Share of walking in the total number of trips	Percentage of trips performed on foot in the total volume of daily trips in the area of the city of Belgrade (%)
Share of bicycles in the total number of trips	Percentage of trips performed by bicycle in the total volume of daily trips in the area of the city of Belgrade (%)
Share of cars in the total number of trips	Percentage of trips performed by car in the total volume of daily trips in the area of the city of Belgrade (%)
Share of public transport (by subsystems) in the total number of trips	Percentage of trips performed by public transport in the total volume of daily trips in the area of the city of Belgrade (%)
Average travel time by car	Average travel time by car in the street and road network in the area of the city of Belgrade (min.)
Share of "shared cars" in the total number of trips	Percentage of "shared car" trips in the total volume of daily trips in the area of the city of Belgrade (%)
Share of "shared bikes" in the total number of trips	Percentage of "shared bike" trips in the total volume of daily trips in the area of the city of Belgrade (%)
Public transport reliability	Adherence to timetables in public transport. Percentage of departures accomplished within the timeframe proposed by the timetable (%)
Transport work (veh.*km and veh.*h in the network)	Number of vehicle-kilometres and vehicle-hours on the street and road network of the city of Belgrade (803.*km, 803.*h)
Time losses in the network/on intersections	Time loss due to queue formation and passing through intersections, in total seconds or seconds per vehicle (s, minutes)
LoS in the network/on intersections	Indicator of intersection/network operation calculated depending on the utilization of capacity, exploitation speed, traffic flow density, time losses in intersections, etc. (A-F)
Length of newly constructed roads (km)	Length of newly-constructed street network in a set period of time (annually) (km)
Length of new public transport lines (km)	Length of newly-established public transport lines (km)
Length of newly constructed/reconstructed bicycle paths (km)	Length of newly constructed cycling network in a set period of time (annually) (km)
Length of newly constructed/reconstructed sidewalks (km)	Length of newly built/reconstructed sidewalks in a set period of time (annually) (km)
Length of newly constructed/reconstructed footpaths (km)	Length of newly built/reconstructed footpaths in a set period of time (annually) (km)
Number of vehicles accessible to persons with special needs	Number of public transport vehicles by type (tram, bus, trolleybus) with entrances/exits and platforms adapted for people with special needs



Indicator	definition
Public transport vehicle speed (transportation, operation)	Average travel speed in public transport vehicles by subsystems (km/h)
Number of newly constructed/ reconstructed underground passages, pedestrian walkways and elevators	Number of built/reconstructed underground passages, pedestrian walkways and elevators in a set period of time
Number and structure of traffic accidents	The total number of traffic accidents and the number of traffic accidents by structure (material damage, injured, killed, pedestrians, cyclists, etc.) per year in the city of Belgrade
Carbon dioxide emissions	The difference in the modeled carbon dioxide emissions for the base year and the analyzed year, due to traffic trips; traffic infrastructure works, replacement of the fleet of existing vehicles and introduction of new vehicles, afforestation measures, landscaping and introduction of new solutions (green roofs, vertical gardens, etc.), for the base and analyzed year, for the spatial coverage of the Plan
Ground-level ozone concentration	Measuring station data: location, measuring interval, method (standard, accreditation, certificate validity), periods in which the station was out of function, location and method of access to unverified ("raw") and verified data, number of hourly and daily limit values exceedances (LV) during the month, "boxplot" for the measured parameter values during the month (median, minimum, maximum, first and third quarter, outliers), for each measuring station that measures the parameter on the territory of the city of Belgrade. The number of hourly and daily exceedances by month for the base and analyzed year for each station measuring the parameter
Sulfur dioxide concentration	Measuring station data: location, measuring interval, method (standard, accreditation, certificate validity), periods in which the station was out of function, location and method of access to unverified ("raw") and verified data, number of hourly and daily limit values exceedances (LV) during the month, "boxplot" for the measured parameter values during the month (median, minimum, maximum, first and third quarter, outliers), for each measuring station that measures the parameter on the territory of the city of Belgrade. The number of hourly and daily exceedances by month for the base and analyzed year for each station measuring the parameter
Carbon monoxide concentration	Measuring station data: location, measuring interval, method (standard, accreditation, certificate validity), periods in which the station was out of function, location and method of access to unverified ("raw") and verified data, number of hourly and daily limit values exceedances (LV) during the month, "boxplot" for the measured parameter values during the month (median, minimum, maximum, first and third quarter, outliers), for each measuring station that measures the parameter on the territory of the city of Belgrade. The number of hourly and daily exceedances by month for the base and analyzed year for each station measuring the parameter

indicator	definition
Nitric oxide concentration	Measuring station data: location, measuring interval, method (standard, accreditation, certificate validity), periods in which the station was out of function, location and method of access to unverified ("raw") and verified data, number of hourly and daily limit values exceedances (LV) during the month, "boxplot" for the measured parameter values during the month (median, minimum, maximum, first and third quarter, outliers), for each measuring station that measures the parameter on the territory of the city of Belgrade. The number of hourly and daily exceedances by month for the base and analyzed year for each station measuring the parameter
PM10 concentration	Measuring station data: location, measuring interval, method (standard, accreditation, certificate validity), periods in which the station was out of function, location and method of access to unverified ("raw") and verified data, number of hourly and daily limit values exceedances (LV) during the month, "boxplot" for the measured parameter values during the month (median, minimum, maximum, first and third quarter, outliers), for each measuring station that measures the parameter on the territory of the city of Belgrade. The number of hourly and daily exceedances by month for the base and analyzed year for each station measuring the parameter
PM2,5 concentration	Measuring station data: location, measuring interval, method (standard, accreditation, certificate validity), periods in which the station was out of function, location and method of access to unverified ("raw") and verified data, number of hourly and daily limit values exceedances (LV) during the month, "boxplot" for the measured parameter values during the month (median, minimum, maximum, first and third quarter, outliers), for each measuring station that measures the parameter on the territory of the city of Belgrade. The number of hourly and daily exceedances by month for the base and analyzed year for each station measuring the parameter
Noise level	Measuring station data: location, measuring interval, method (standard, accreditation, certificate validity), periods in which the station was out of function, location and method of access to unverified ("raw") and verified data, number of hourly and daily limit values exceedances (LV) during the month, "boxplot" for the measured parameter values during the month (median, minimum, maximum, first and third quarter, outliers), for each measuring station that measures the parameter on the territory of the city of Belgrade. The number of hourly and daily exceedances by month for the base and analyzed year for each station measuring the parameter
Number of hybrid and electric cars	The number of registered vehicles with hybrid and electric motors by type (car, bus, delivery vehicle) based on the records of the Ministry of Interior
Number of electric car charging stations	Number of charging stations for electric cars in public areas
Number of "shared bike" stations	Number of "shared bike" service points in public areas
Number of "shared cars"	Number of "shared car" service points in public areas
Number of parking lots for cars and their utilization	Total number of parking lots for cars, by structure (street, garage, parking lot) and average number of changes per parking space

Indicator	definition
Number of parking lots for bicycles and their utilization	Total number of parking lots for cyclists, by structure (street, garage, parking lot) and average number of changes per parking space
Number of "park and ride" locations	Number and capacity of locations in the city area where the "park and ride" service is provided
Number of "bike and ride" locations	Number and capacity of locations in the city where the "bike and ride" service is provided
Number of built/equipped "bed and bike" centers	The number of centers that are recognized and mapped as "bed and bike" and meet the criteria prescribed for that. This includes creating guides with the locations of the centers.
Reachability by public transport	A measure of the reachability of an area by the public transport system. It is calculated based on the number of inhabitants, the number of employees and the travel time by public transport
Population with 10-minute walk access to public transport lines	The number of inhabitants within ten minute walking distance isochrones to public transport stops
Length of landscaped paths within the existing green areas	Length of walking and biking trails within parks and other green areas
Number of locations in public areas where barriers to people with special needs have been removed	Number of urban locations where infrastructure has been adapted for people with special needs by removing physical barriers
Length (surface) of calm traffic zones	The length of the street network or the area of the zone in which the traffic calming measure has been implemented
Number of schools with a regulated protection zone	Number of schools and locations around the school in which a protection zone with traffic calming has been implemented, etc.
GDP at the municipal level	Gross Domestic Product at the level of municipalities or statistical zones
Percentage of exchange of daily trips between municipalities	Percentage of daily trips performed between municipalities outside the GUP area and the municipalities in the area



## PARTICIPATION OF STAKEHOLDERS AND CITIZENS

A successful outcome of the plan can only be achieved if citizens are informed, understand the vision and support the solutions. Often citizens cannot be involved directly, but they certainly need to be informed about the envisioned process as well as its results. Involvement of stakeholders and citizens was, apart from the digital campaign and directly addressed requests for cooperation, documentation, data, etc., actively carried out all throughout the development of the Plan according to the schedule given below. Here is the sequence of public events from the 1st, 2nd and 3rd phase of work, with event locations and times:

1. Public debate 1 - 10.4.2019 – Wednesday, CEP premises, at 15.30 h

Topic: SUMP Challenges and Potentials

Presented: a general presentation of Belgrade SUMP

Invitees: task team, secretariat commission, task force, members of CEP's Wednesday Conversations mailing list...



2. Panel Discussion - 16.4.2019 (Tuesday) - CeS.TRA premises, at 12.00 h

Topic: Self-assessment, resources, stakeholders, SUMP Challenges and Potentials

Presented: SUMP Presentation, Self-assessment, resources, stakeholders, SUMP Challenges and Potentials

Invitees: task team, secretariat commission, task force



3. Public Debate 2 – 24.4.2019 – Wednesday CEP premises at 15.30

Topic: Scenarios

Presented: Scenario presentation

Invitees: task team, secretariat commission, task force, members of CEP's Wednesday Conversations mailing list...



4. Public Debate – 15.4.2019 until 24.4.2019 – a process involving all public events, social networks, poll, the website [www.bgsaobracaoj.rs](http://www.bgsaobracaoj.rs), [sump.beograd@gmail.com](mailto:sump.beograd@gmail.com)

Topic: SUMP Challenges and Potentials, Scenarios, Self-Assessment, Resources

Presented: SUMP presentation

Realization: all public events, social networks, poll, FB page, the website [www.bgsaobracaoj.rs](http://www.bgsaobracaoj.rs)

5. Public forum – 23.4.2019 – 20<sup>th</sup> floor assembly hall in Kraljice Marije Street

Topic: SUMP, challenges, potential and scenarios

Presented: SUMP presentation, SUMP Challenges and Potential, scenarios

Invitees: task team, secretariat commission, task force, stakeholders, the public through the FD page and the [www.bgsaobracaoj.rs](http://www.bgsaobracaoj.rs) website



6. Public Survey - 15.5.2019 until 31.5.2019

Topic: Mobility

Prepared materials: a brief explanation of SUMP and a survey form with a QR code

Distribution: digital – social networks, the website [www.bgsaobracaj.rs](http://www.bgsaobracaj.rs), mailing lists belonging to CEP, CeS.TRA, [sump.beograd@gmail.com](mailto:sump.beograd@gmail.com), Secretariat for Transport, City Hall Secretariat for Information; and analogous – distributing survey forms with a QR code at all public events and through printed media



7. Workshop 1 "Development of the SUMP Vision" - 05.06.2019 - Wednesday, Great assembly hall of the Town Hall, Number 6, Nikole Pašića square, at 18.00 h

Topic: Vision, SUMP Goals

Presented: General information regarding SUMP, assessment of the current conditions, scenarios, proposed vision and goals of SUMP

Invitees: task team, secretariat commission, task force, *радну тим, комисија секретаријата, радна зупна*, members of CEP's Wednesday Conversations mailing list, stakeholders, invitations to the public issued via: "Politika" daily newspaper, social networks, [www.bgsaobracaj.rs](http://www.bgsaobracaj.rs)

8. Workshop 2 "Development of SUMP Vision and Identification of Priorities" - 06.06.2019 -Thursday, Secretariat for Transport, 43-45, 27. Marta Street, Office of the Secretary for Transport, II floor, 10.00 h

Topic: Vision, Goals of SUMP

Presented: General information regarding SUMP, assessment of the current conditions, scenarios, proposed vision and goals of SUMP

Invitees: task team, secretariat commission, task force, stakeholders





9. Workshop 3 "Development of SUMP Vision and Identification of Priorities" - 07.06.2019 - Friday, Secretariat for Public Transport, 43-45, 27. Marta Street, Office 242a, II floor, 10.00 h

Topic: Vision, Goals of SUMP

Presented: General information regarding SUMP, assessment of the current conditions, scenarios, proposed vision and goals of SUMP

Invitees: task team, secretariat commission, task force, stakeholders



10. Public Survey - 01.07.2019 until 01.09.2019

Topic: "Vision, goals, measures"

Prepared: brief explanation of the vision, goals, measures of SUMP, and a survey form with a QR code.

Distribution: digital – social networks, the websites [www.bgsaobracaj.rs](http://www.bgsaobracaj.rs) and [www.bgprevoz.rs](http://www.bgprevoz.rs), mailing lists belonging to CEP, CeS.TRA, [sump.beograd@gmail.com](mailto:sump.beograd@gmail.com), Secretariat for Transport, Secretariat for Public Transport, City Hall, Secretariat for Information; and analogous – distributing survey forms with a QR code at all public events and through printed media

11. Competition - 08.7.2019, until 15.9.2019

Topic: SUMP vision

Prepared: public announcement and terms of reference of the competition

Distribution: digital – social networks, the [www.bgsaobracaj.rs](http://www.bgsaobracaj.rs) website, printed media – an announcement in the daily newspapers "Blic" and "Politika."

Status: postponed, to be realized during the month of November 2019

12. workshop "Measures to Realize Goals 1", 17.09.2019 on the premises of the Standing Conference of Cities and Municipalities, 22 Makedonska Street, 11 floor, from 11.00-13.00 h, with representatives of the urban and contact municipalities, realized as part of European Mobility Week

Topic: Measures to achieve SUMP goals

Presented: General information regarding SUMP, scenarios, vision, goals, and proposed measures for the realization of SUMP goals

Invitees: representatives of 17 urban and 12 contact municipalities and towns, task team, secretariat commission, task force



13. Workshop "Measures to Realize Goals 2" 22.09.2019, City Hall, the small assembly hall at 6, Nikole Pašića square, from 11.00-13.00 h, with representatives of the stakeholders who will participate in the implementation of measures and action plans adopted by the SUMP

Topic: Measures for the Realization of SUMP Goals

Presented: General information regarding SUMP, scenarios, vision, goals and proposed measures for the realization of SUMP goals

Invitees: Deputy Mayor, Assistant Mayor, Chief Urbanist, Director of the Belgrade Land Development Public Agency, Secretary for Transport, Secretary for Public Transport, Secretary for Investments, Secretary for the Environment, with associates, director of the PUC "Belgrade Metro and Train", director of PC "Roads of Belgrade", task team, secretariat commission, task force.



14. Outdoor manifestation - 22.9.2020 – Republic square, from 9.00-17.00 h

Topic: SUMP – European mobility week

Prepared: promotional materials

Manifestation participants and events; provided in Realization Report for Phase II

Invitees: task team, secretariat commission, task force, stakeholders, the media, announced on social networks, and the website [www.bgsaobracaj.rs](http://www.bgsaobracaj.rs)







15. Public debate - 25.09.2019 City Hall, large assembly hall at 6, Nikole Pašića square, from 18.00-20.00 h  
 Topic: Measures for the Realization of SUMP Goals  
 Presented: general information regarding SUMP, scenarios, vision, goals and proposed measures for the realization of SUMP goals  
 Invitees: Chief Urbanist, stakeholders, task team, secretariat commission, task force, invitations to the public issued via: an announcement in the "Politika" daily newspaper, social networks, [www.bgsaobracaj.rs](http://www.bgsaobracaj.rs)



16. Competition - 01.11 until 15.12.2019  
 Topic: SUMP Vision  
 Repeated: Invitation and terms of reference for the competition  
 Distribution: digital – social networks, the website [www.bgsaobracaj.rs](http://www.bgsaobracaj.rs), printed media – announcements in the daily newspapers "Blic" and "Politika"



17. Public Survey - 02.12.2019 to 20.02.2020

Topic: "Measures for the Realization of SUMP Goals"

Prepared: a brief explanation of the significance of proposed measures for the realization of SUMP goals and a survey form with a QR code

Distribution: digital – social networks, website [www.bgsaobracaj.rs](http://www.bgsaobracaj.rs) and mailing lists belonging to CEP, CeS, TRA, [sump.beograd@gmail.com](mailto:sump.beograd@gmail.com), Secretariat for Transport, City Hall, Secretariat for Information; analogous – distribution of survey forms with a QR code at all public events and via printed media

18. Exhibition - 15.01.2020 to 31.01.2020 National Gallery Belgrade, 1 Dositejeva Street

Topic: SUMP vision

Prepared: awards, exhibition hall

Distribution: exhibition hall, digital – social networks, the website [www.bgsaobracaj.rs](http://www.bgsaobracaj.rs), the media





19. "SUMP Monitoring" workshop – Friday 31.01.2020 – City Hall (Stari Dvor – the small assembly hall), 2 Dragoslava Jovanovića Street, from 10.00-12.00 h

Topic: monitoring methodology

Prepared: presentation of indicators for the monitoring and evaluation of the SUMP

Invitees: Mayor, Chief Urbanist, stakeholders, task team, secretariat commission, task force





Digital campaign was conducted through web and Facebook pages.



Webpage:

<http://www.bgsaobracaj.rs/>



Facebook page:

[https://www.facebook.com/Plan-odr%C5%BEive-urbane-mobilnosti-Poum-Sump-2299828350238743/?modal=admin\\_todo\\_tour](https://www.facebook.com/Plan-odr%C5%BEive-urbane-mobilnosti-Poum-Sump-2299828350238743/?modal=admin_todo_tour)



SUMP Instagram profile:

[https://www.instagram.com/plan\\_odrzive\\_urbane\\_mobilnosti/](https://www.instagram.com/plan_odrzive_urbane_mobilnosti/)



CITY OF BELGRADE  
BELGRADE CITY ADMINISTRATION

## **MEMORANDUM ON COOPERATION FOR THE IMPLEMENTATION AND MONITORING OF THE SUSTAINABLE URBAN MOBILITY PLAN FOR BELGRADE (SUMP BG)**

SECRETARIAT FOR TRANSPORT  
SECRETARIAT FOR PUBLIC TRANSPORT  
SECRETARIAT FOR INVESTMENTS  
SECRETARIAT FOR ENVIRONMENTAL PROTECTION  
SECRETARIAT FOR UTILITIES AND HOUSING SERVICES  
CITY MUNICIPALITIES

(Voždovac, Vračar, Zvezdara, Zemun, Novi Beograd, Palilula, Rakovica, Savski Venac, Stari Grad and  
Čukarica)

MINISTRY OF INTERIOR, BELGRADE POLICE ADMINISTRATION

Road Traffic Safety Agency

PE Roads of Belgrade

Institute of Informatics and Statistics

Belgrade Tourism Organisation

Belgrade Land Development Public Agency, PC

PUC Greenery Belgrade

PUC Parking Services

Urban Public Transport Enterprise "GSP" Beograd

PUC Belgrade Metro and Train

Of the Law on Local Self-Government ("Official Gazette of the Republic of Serbia", No. 129/07, 83/14, 101/16  
and 47/18) and/or Article \_\_\_ of the Law on State Administration ("Official Gazette of the Republic of Serbia",

No. 79/05, 101/07, 95/10, 99/14, 47/18 and 30/18) City of Belgrade - Belgrade City Administration and: Secretariat for Transport, Secretariat for Public Transport, Secretariat for Investments, Secretariat for Environmental Protection, Secretariat for Utilities and Housing Services, City Municipalities (Voždovac, Vračar, Zvezdara, Zemun, Novi Beograd, Palilula, Rakovica, Savski venac, Stari grad and Čukarica), Ministry of Interior - Belgrade Police Administration, PE Roads of Belgrade, Institute for Informatics and Statistics, Belgrade Tourism Organisation, Belgrade Land Development Public Agency, PUC "Greenery Belgrade", PUC "Parking Services", PUC City Company "Belgrade", PUC "Belgrade Metro and Train" hereinafter: the Competent Institutions for the Implementation of the SUMP) agree to regulate their communication and cooperation with this Memorandum of Cooperation (hereinafter: the Memorandum).

## **Subject of the Memorandum of Cooperation**

### **Article 1.**

The subject of the Memorandum is the formalization and establishment of cooperation between the Competent Institutions for the Implementation of the SUMP, regarding the implementation and monitoring of the results of the Sustainable Urban Mobility Plan of Belgrade (hereinafter SUMP BG).

The main goal of SUMP BG is to promote solutions for sustainable urban mobility as well as to improve the quality of life, both for the residents of the aforementioned City Municipalities, and for the economy and visitors to the City of Belgrade.

SUMP BG is a basic/key document that defines the way in which the plans, priorities and programs of users, concerning the transformation of the transport system, will lead to changes over time and affect the implementation of a number of different sustainable development policies.

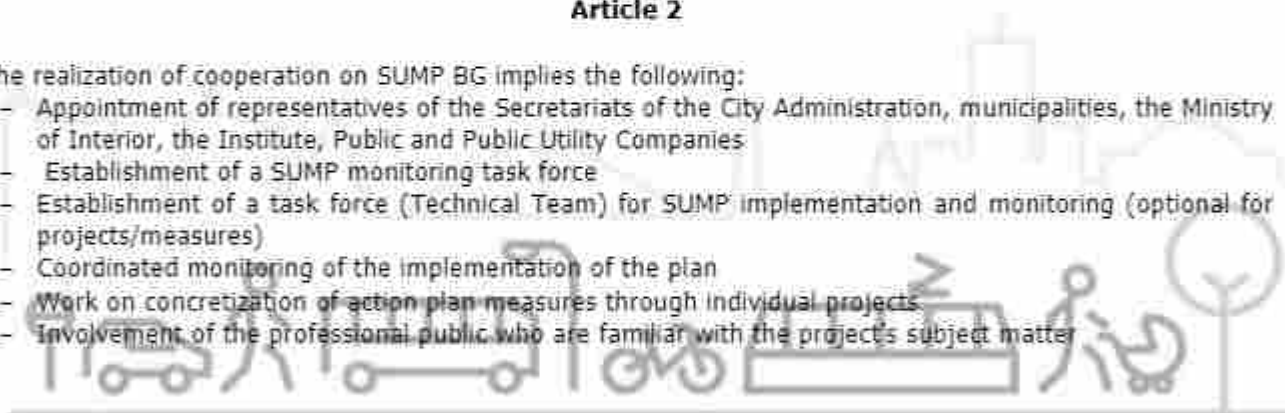
The signatories of the Memorandum of Cooperation will provide professional and political support to the implementation, monitoring, development and improvement of the Sustainable Urban Mobility Plan of Belgrade.

## **Realization of cooperation**

### **Article 2**

The realization of cooperation on SUMP BG implies the following:

- Appointment of representatives of the Secretariats of the City Administration, municipalities, the Ministry of Interior, the Institute, Public and Public Utility Companies
- Establishment of a SUMP monitoring task force
- Establishment of a task force (Technical Team) for SUMP implementation and monitoring (optional for projects/measures)
- Coordinated monitoring of the implementation of the plan
- Work on concretization of action plan measures through individual projects
- Involvement of the professional public who are familiar with the project's subject matter





The SUMP monitoring task force should be composed of representatives of all stakeholders (City Administration, municipalities, public and public utility companies, etc.). This team should meet periodically (define the period: every 2-3 months), if there is no need for more frequent meetings during the implementation of a certain measure, which can be regulated by the Rules of Procedure of this body.

The Task Force (Technical Team) for SUMP implementation and monitoring for a specific measure or project, should prepare a report on SUMP implementation and submit it to the Task Force for SUMP Monitoring for consideration and adoption.

The POUM Monitoring Working Group should periodically and annually report on the implementation of the plan and submit the Report to the Mayor/Chief Urbanist/Secretary of Transport.

Reporting on progress made through the annual performance monitoring will ensure that the work of project beneficiaries and other stakeholders is clearly and regularly presented to the citizens of Belgrade, and can also be used to inform about decisions made and to plan investment priorities.

### **Duration of cooperation**

#### **Article 3**

This Memorandum is concluded for a limited period of time, for a period of 10 years (or a shorter time and is then renewed), from the day of signing.

### **Final provisions**

#### **Article 4**

The Memorandum shall enter into force on the day of signing.

The Memorandum may be amended with the written consent of the Contracting Parties.

Concluded in Belgrade, \_\_\_\_\_ (date) \_\_\_\_\_

On behalf of the Secretariat for Transport

On behalf of Zemun municipality

On behalf of the Secretariat for Public Transport

On behalf of Novi Beograd municipality



On behalf of the Secretariat for Investments	On behalf of Palilula municipality
On behalf of the Secretariat for Environmental Protection	On behalf of Rakovica municipality
On behalf of the Secretariat for Utilities and Housing Services	On behalf of Savski Venac municipality
On behalf of Voždovac municipality	On behalf of Stari Grad municipality
On behalf of Vračar municipality	On behalf of Čukarica municipality
On behalf of Zvezdara municipality	On behalf of the Ministry of Interior - Belgrade Police Administration
On behalf of the PE Roads of Belgrade	On behalf of PUC Greenery Belgrade
On behalf of the Institute of Informatics and Statistics	On behalf of PUC Parking Services
On behalf of the Belgrade Tourism Agency	On behalf of Urban Public Transport Enterprise "GSP" Beograd
On behalf of the Belgrade Land Development Public Agency	On behalf of PUC Belgrade Metro and Train



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