



SHIFTING GEARS: ADVANCING GREEN AND INCLUSIVE MOBILITY

IN WESTERN BALKAN MEDIUM-SIZED CITIES

Public transport and 'active mobility' are one of the key elements of urban mobility transitions. These means offer higher energy efficiency and lower CO₂ emissions per passenger-kilometre compared to private cars. A step-by-step transition to a carbon-free transport system requires, in addition to incentivising sustainable urban planning, a comprehensive set of transport policies, including expanding and improving public transport, promoting walking and cycling, and accelerating the adoption of electric and other low-emission vehicles. Additional measures include enforcing stricter parking regulations and introducing road pricing to reduce car dependency. These policies help create a more sustainable and accessible urban mobility system.

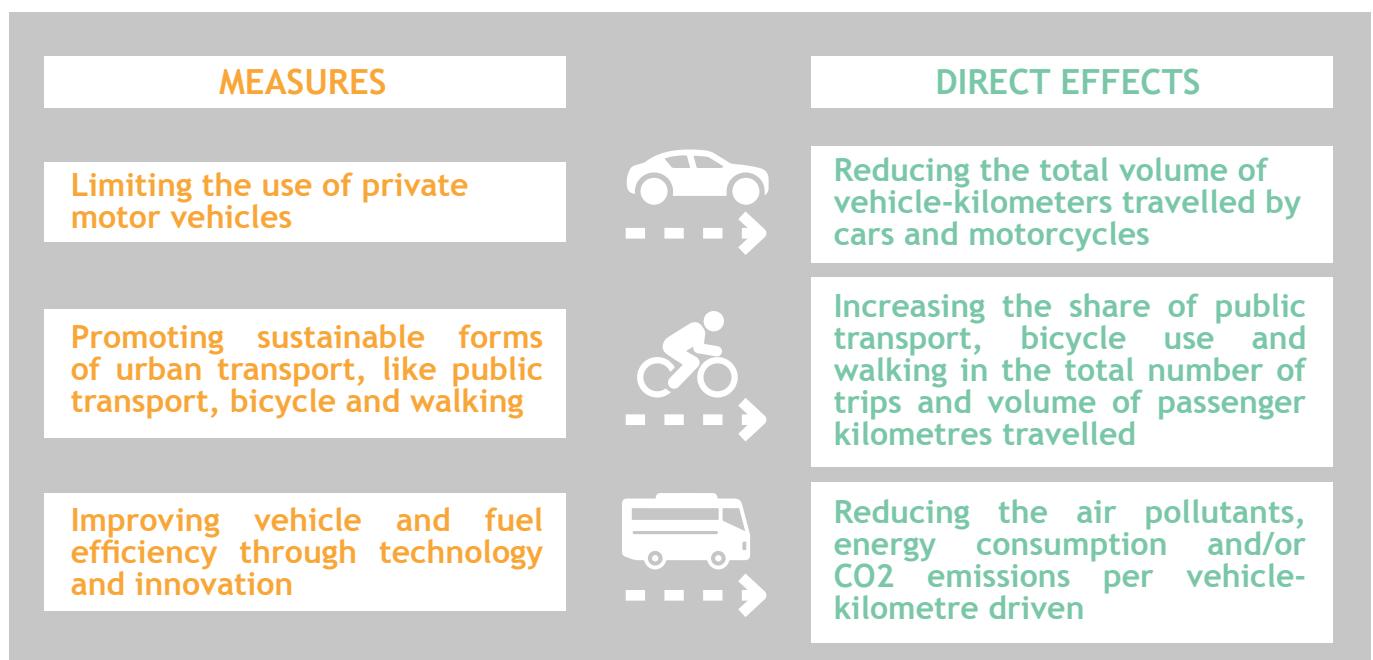
This policy brief examines potential improvements to sustainable urban mobility in the City of Kragujevac in Serbia, focusing on solutions with near-term, practical effects that are relatively easy and cost-effective to implement. The insights drawn from Kragujevac¹ could be applied to other medium-sized cities in the Western Balkans and beyond. The recommendations are intended to assist policymakers, urban transport experts and urban planners, and other professionals within the local public administrations in making informed decisions that will advance the transition to green and inclusive mobility. Additionally, the brief emphasizes the crucial role of citizens as key stakeholders, highlighting their views gathered through a survey on the quality of public transport and its potential transition in Kragujevac, offering essential insights into local needs and expectations for future mobility solutions.

Key Concepts

URBAN TRANSPORT SYSTEMS (UTS) are not limited to the means of transport but integrates several spatial and societal functions, including: housing, work, education, and recreation. The way UTS are organized shapes social behaviours and overall quality of life.

SUSTAINABLE URBAN MOBILITY entails designing transport and urban development strategies that reduce environmental harm, boost economic efficiency, tackle social inequality, and pave the way for a cleaner, healthier future.

TRANSPORT POLICY MEASURES in the context of sustainable urban mobility are most effectively grouped into three main categories (outlined below²). These include regulatory and incentive-based policies designed to mitigate the negative environmental impacts of urban transport, implemented by governments and local authorities. To fully achieve sustainable urban mobility, these measures must be integrated and coordinated with urban planning and land-use policies.



Urban Transport In Kragujevac (And Western Balkan) - Key Issues

Kragujevac's urban transport system³, like many medium-sized cities in the Western Balkan, suffers from heavy traffic, frequent jams, increased travel times, high fuel consumption, and significant air and noise pollution, impacting negatively to citizens quality of life and public health. The situation is particularly severe in central areas, which concentrate commercial, administrative, and residential functions.

Kragujevac's public transport⁴, relying on conventional buses and taxis, faces challenges

such as narrow streets, an inefficient urban layout, and lack of dedicated bus lanes. Diesel-powered buses contribute to high energy consumption and pollution. However, Kragujevac does not particularly stand out in the broader regional context. Air pollution in the Western Balkans is among the highest in Europe, with urban transport being a major source of NO_x, and particulate matter (PM_{2.5}, PM₁₀). This largely derives from older vehicles, particularly diesel-powered ones, which have a greater environmental impact than newer ones. While EU countries have rapidly

³ According to the 2022 Census of Population, Kragujevac has 146 thousands inhabitants (entire LAU has 171 thousands).

² According to Vračarević, B. (2023) Sustainable urban development and determinants of urban transport energy consumption. Belgrade: Faculty of Geography [In Serbian]

removed old vehicles from circulation, these remain in the streets of Serbia and other Western Balkan countries. In 2019, air pollution caused

nearly 8,500 premature deaths in Serbia⁵, with health-related pollution costs surpassing those in all other Western Balkan countries combined⁶.



Citizens' Views On Public Transport Quality And Its Potential Transition In Kragujevac

A survey done in the City of Kragujevac involving public transport users gathered citizens' opinions on the quality of public transport services and potential options for a sustainable transition. A total of 424 respondents participated in the survey, with data gathered through a non-probabilistic convenience sampling method. The survey employed a combination of online self-administered questionnaires and field-based interviews. Public input highlighted the need of improving the basics i.e., reliability, frequency and affordability.

More than half of the survey respondents used public transport frequently, indicating a significant dependency on public transport. Even 41% of them do not have access to a car, which highlights the importance of providing efficient and reliable public transport services. On the other hand, a significant share of occasional or non-users, along with 59% of respondents that have access to a car, can be encouraged to use public transport through improved service quality.

To meet users' needs effectively it is necessary to consider various aspects of public transport.

³ Vehicle ownership is 320 per 1,000 people, slightly above the national average for Serbia.

⁴ The total number of public transport trips in 2023 was 10,072,037.

⁵ Air pollution data portal. The global health observatory [online database]. Geneva: World Health Organization; (<https://www.who.int/data/gho/data/themes/air-pollution>).

⁶ Green Agenda for the Western Balkans. Brussels: European Commission; (https://enlargement.ec.europa.eu/system/files/2020-10/green_agenda_for_the_western_balkans_en.pdf).

Results show that “comfort of the journey” is the most critical factor (93% of respondents consider it to be “very important” or “mostly important”). Next priorities are “safety” and “information availability”. The vast majority (83%) of respondents consider “frequency of public transport” to be “very important” or “mostly important”. Furthermore, half of the respondents rated factors such as “cleanliness”, “travel time”, “station proximity”, “cost of transportation”, “environmental impact”, “ease of connection” and “comfort of waiting” as “very Important”.

Transferring between bus lines or other forms of transport appears to be challenging due to long waiting times, poorly synchronized schedules, or complicated transfer processes. Based on survey data, steps that could be taken to improve satisfaction with ease of connection are improved scheduling, real-time updates, increased frequency etc.

A significant portion of respondents are dissatisfied with the current cost of transportation. Reasons could include affordability issues, perceived lack

of value for money, or comparison with other transport options. Based on survey data, possible solutions can include service improvements and price adjustment (or even fully subsidised) to make public transport just and available for all, including low-income individuals.

Over a third of respondents have significant concerns about the environmental impact of public transport, including greenhouse gas emissions, and noise pollution. Tackling this challenge requires transition to cleaner technologies, promotion of sustainable practices and awareness campaigns.

A significant majority, 90% of the respondents, indicated they are willing to use electric buses, which suggests that this measure could be well-received by the public. Many of them indicated that an additional transfer would not affect their decision, which suggests a willingness to accommodate minor inconveniences for the benefits offered by electric buses. These results should support policy decisions, investments, and initiatives aimed at improving the public transport system with more sustainable options.



Possible Pathways To Sustainable Mobility In Kragujevac

In the context of the GreenFORCE project research case of Serbia⁷, three distinct scenarios were developed (from the easiest to the most difficult to achieve in practice) through consultations with key stakeholders to explore potential future pathways for the urban transportation system. Stakeholder input was crucial in ensuring that the scenarios reflect the needs and priorities of local communities, businesses, and other relevant parties.

The “Green baby steps” scenario,

entails the introduction of three lines of electric buses (free service) that will operate within central areas of Kragujevac and partly substitute existing conventional buses. Free services would attract more users of public transport and reduce car dependency and congestion. Additionally, free services would make public transport accessible to all citizens regardless of socio-economic status.

In the “Moderate transition” scenario,

the city centre is also served by free electric buses. The new dimension involves limiting parking opportunities in and around the centre, primarily achieved through parking restrictions and reducing the number of on-street parking spaces. Parking restrictions can indirectly discourage the use of cars in urban areas, serving as a simple instrument to implement. However, this measure will only be successful if alternatives to private transport, such as an efficient public transport system, are available. Consequently, the surfaces used for parking spaces can be repurposed for other uses.

The “(Almost) sustainable mobility” scenario

additionally (to the previous two) includes congestion charges as corrective instrument aimed at reducing traffic congestion and thus increasing average driving speed. Combining congestion and parking charges usually leads to the best results in solving traffic congestion problems. Improvements in public transport, including free of charge lines in combination with congestion charges provide a feasible and comfortable solution for users to abandon or reduce the use of private vehicles. As a result, it is expected to increase the average speed of movement and the number of trips by public transport, while the time spent in traffic is expected to decrease significantly.

Costs And Benefits Of Proposed Scenarios

The costs and benefits analysis (CBA) conducted over a 10-year period indicates that the most ambitious scenario, “(Almost) Sustainable Mobility”, has a significantly positive net present value, demonstrating that the project’s benefits outweigh its costs. This is primarily driven by expected revenue from the congestion pricing

scheme. In contrast, the costs outweigh the benefits in the former two scenarios, with low and mid-level ambition. This suggests that, despite being the most challenging to implement, this scenario would be the most economically viable for the city of Kragujevac.

⁷ Research Study Report available at <https://greenforcetwinning.net/projects/results-and-deliverables/>.

Key Benefits Of Urban Mobility Transition

ENVIRONMENT

REDUCED AIR POLLUTION AND GHG EMISSIONS from decreased traffic and smoother flow. Lower emissions from vehicles searching for parking, leading to **IMPROVED AIR QUALITY**.

IMPROVED URBAN ENVIRONMENT and **REDUCED NOISE POLLUTION** can enhance the overall **QUALITY OF LIFE FOR RESIDENTS**.

SOCIETY

EQUITY IMPROVEMENTS: Revenue from congestion charges can be reinvested in public transportation and infrastructure, benefiting the wider community.

IMPROVED ACCESS TO TRANSPORTATION for individuals who cannot use a car due to age, physical condition, socio-economic status, or other factors, promoting **GREATER SOCIAL INCLUSION AND MOBILITY EQUITY**.

STREET SPACE could be repurposed **FOR** green areas, bike lanes, pedestrian zones, or other **COMMUNITY-BENEFICIAL USES**, resulting in **IMPROVING LIFE QUALITY**.

HEALTH

Less traffic congestion can lead to better air quality, **REDUCING RESPIRATORY AND CARDIOVASCULAR PROBLEMS** among residents.

INCREASED PHYSICAL ACTIVITY: Enhanced pedestrian and cycling infrastructure can encourage **HEALTHIER LIFESTYLES**, i.e. walking, cycling, and the use of public transportation can contribute to **BETTER PUBLIC HEALTH**.

ECONOMY

More EFFICIENT USE OF public and private **RESOURCES** (in the long run). Disposable income to be used in ways that dynamize the **LOCAL ECONOMY**.

Revenue from parking and congestion charges to be used for **SUSTAINABLE MOBILITY INVESTMENTS**. Reduced fuel costs due to improved travel time.

Improved travel times can lead to **INCREASED PRODUCTIVITY** for businesses and individuals. Improved accessibility by foot can boost local businesses.

Increase in **PROPERTY VALUE** due to improved environmental quality and visual appeal of the streets.

Greatest Challenges

Implementation of green transition policies in Serbia indicate some, yet limited progress. Addressing challenges requires coordinated efforts across all levels of governance, in addition to public and stakeholder involvement. However, the necessary bridges between policy areas are currently missing as well as the needed expertise within public administrations. Lack of knowledge,

or awareness, is also the key reason why there is substantial resistance from both the public and policymakers to adopt well recognised mobility solutions.

Social change is particularly challenging, as pushing people towards adopting 'greener practices' requires changing strongly sedimented

habits, beliefs and perception. For instance, in Serbia, as in other countries, the car is largely perceived as providing the greatest comfort and freedom of movement and often represents a status symbol.

The same condition affects policy makers who tend to favour popular solutions over rational and expert-based ones. The lack of strategic thinking then results in short-term isolated interventions instead of holistic and long-term solutions.

Policy Recommendations

Since most trips in medium-size urban areas do not exceed a five-kilometre radius, there is considerable potential for increasing more favourable means, from environmental and social perspectives, including “active mobility” (i.e., walking, cycling, and other modes of non-motorized transport) for short distances and public transport for longer journeys. To this end, the following recommendations are meant to advice policymakers and practitioners in their efforts to conduct a transition towards sustainable urban mobility.

- Strengthen the capacity of institutions involved in the implementation of the green transition, including 1) continuous capacity building of personnel and 2) allocated the resources and the structures necessary to enable for better coordination between different levels and sectors of the public administration.
- Improve the quality of institutions by lifting the public interest to the highest priority, eliminating partisan power-games, nepotism, and clientelism. Quality of institutions increases with a service orientated mentality based on expert and user knowledge.
- Improve the capacities to absorb the available EU funds while ensuring long-term financial independence. While external funding can accelerate the transformation of urban transport systems, projects must be designed to be economically viable and self-sustaining beyond initial funding periods. To achieve this, cities should focus on strategic project planning and administrative capacity building.

Adding to this, there is a well-to-common challenge with the conduct of policymakers acting on self-interest (whether or not amounting to corruption).

Finally, a challenge for successful transition to sustainable urban mobility include also access to finance both public and private, to invest in infrastructure and new vehicles, as well as the adequate use of the existing resources.

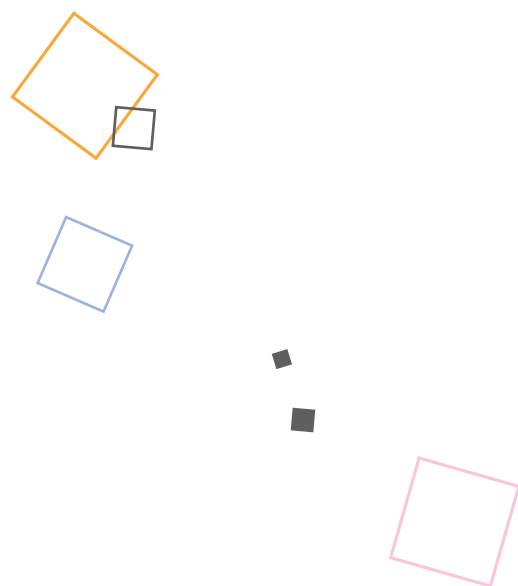
- Diversify internal funding sources through strategies such as public-private partnerships (PPPs) to leverage private sector involvement, crowdfunding to engage local communities, local investment programs to encourage business and resident contributions, and green bonds to attract environmentally conscious investors.
- Take advantage of the process of preparation and adoption of a new generation of planning documents to incorporate new concepts and mechanisms to better align urban transport interventions with ecological and social goals. Developing and implementing Sustainable Urban Mobility Plans (SUMP) requires comprehensive transport and urban studies that outline short-term as well as long-term actions to make mobility more efficient, greener, inclusive, and healthier. Tailoring these plans to local contexts through broad public participation is essential.
- Establish well-structured processes for public participation ensuring that diverse perspectives are considered from early stages of planning processes or at the conception of new public policy interventions. Citizen engagement can foster public support for green transition initiatives particularly when counter-measures are planned and communicated about possible social and economic impacts. Genuine engagement processes serve not only to communicate, but involve citizens in refining goals, verifying data and concepts. In turn, this generates a sense of ownership over proposed solutions, ensuring a fair and effective transition, and enhances civil behaviour.

- Encourage public transport use by improving the basics: reliability, frequency and affordability of public transport, and active mobility by improving the quality and safety of the physical infrastructure i.e., sidewalks, bike-lanes, crossings, signalling, illumination, etc. Consider also the needs of different segments of society or individuals, from children, to senior members, individuals with impaired mobility, and a holistic range of perspectives from comfort, health, sound, accessibility of information, smooth transferring from transport means (or bus lines), etc.
- Generate awareness of the economic benefits of sustainable urban mobility transitions. Consider research-based results and cost-benefit analyses that provide economic evaluation, assessing potential gains such as increased productivity from reduced travel times and stress, as well as enhanced business activity driven by improved walking and cycling infrastructure, etc.
- Establish an environmental governance framework providing the general guidelines and mechanisms for environmental matters, including principles, monitoring, and reporting.

ABOUT THIS POLICY BRIEF

This policy brief was developed by GreenFORCE, a Horizon Europe project which aims at fostering excellence in the “Western Balkans’ green transition” and scientific research capacities of Co-PLAN, Institute for Habitat Development (Albania), Center for Economic Analyses (North Macedonia), and University of Belgrade, Faculty of Geography (Serbia). In twinship with Nordregio - Nordic Institute for Regional Development and Planning - (Sweden) and Politecnico di Torino (Italy), these organisations work closely to produce territorial knowledge through exploratory research and institutional learning.

The policy brief and recommendations build on research conducted by UBGeF on sustainable mobility focusing on the transitioning processes in public transportation at local level and from contributions from the GreenFORCE consortium partnership.



Funded by
the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.

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Photos

Photos: University of Belgrade - Faculty of
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