Transport Inputs to the Western Balkans Green Growth Narrative

Strategic Actions for a Greener and More Efficient Transport Sector

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Policy Note

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Cover page:
i) e-bus charging. Photo credit: Think b/Adobe Stock;
(ii) “Train wagons carrying cargo containers for shipping companies”. Photo credit: freepik
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Acknowledgments

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Abbreviations

AFD	Agence Française de Dévelopement (French Development Bank)
ALB	Albania
ASA	Advisory Services and Analytics
BAU	Business-as-usual
BEBs	Battery Electric Buses
BIH	Bosnia and Herzegovina
CCAP	Climate Change Action Plan
CCDR	Country Climate and Development Report
CO_2	Carbon dioxide
COP26	UN Climate Change Conference 31 October to 12 November, 2021 (Glasgow, UK)
COVID-19	Coronavirus disease
CPF	Country Partnership Framework
CRMMP	Connectivity Reform Measure Management Plan
DPL	Development Policy Loan
EBRD	European Bank for Reconstruction and Development
ECA	Europe and Central Asia
EEA	European Environment Agency
EFTA	European Free Trade Association
EIB	European Investment Bank
EMTA	European Metropolitan Transport Authorities
ETC	European Transport Corridor
ETS	Emissions Trading System
EU	European Union
EUCARIS	European car and driving license information system
EV	Electric Vehicles
GCAP	Green City Action Plan
GDP	Gross Domestic Product
GFDRR	Global Facility for Disaster Reduction and Recovery
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (German Agency for International Cooperation)
GRID	Green, Resilient, and Inclusive (Economic) Development; an expansion of the Green Growth concept
ICE	Internal combustion engine
ICT	Information and Communication Technologies
IFC	International Finance Corporation
IFI	International Financial Institution
IFTs	Inland Freight Terminal
INDC	Intended Nationally Determined Contribution
IPA	Instrument for Pre-accession assistance
IPF	Investment Project Financing
ISRBC	International Sava River Basin Commission
ITF	International Transport Forum
ITS	Intelligent transport systems
JICA	Japan International Cooperation Agency
JV	Joint Venture
LEZ	Low-emission zone
LTSs	Long-Term Strategies
MIGA	Multilateral Investment Guarantee Agency

MKD	North Macedonia
MNE	Montenegro
MPA	Multiphase Programmatic Approach
MTI	Macroeconomics, Trade and Investment
NCCS	National Climate Change Strategy
NDCs	Nationally Determined Contributions
NECP	National Energy and Climate Plan
NO_2	Nitrogen dioxide
NUMP	National Urban Mobility Policy
OECD	Organization for Economic Co-operation and Development
O&M	Operation and Maintenance contract
PPPs	Public-Private Partnerships
SCD	Systematic Country Diagnostics
SDIP	Sava and Drina Rivers Corridor Integrated Development Program
SDG	Sustainable Development Goals
SEETO	South-East Europe Transport Observatory
SIDA	Swedish International Development Cooperation Agency
SO_2	Sulfur Dioxide
SOE	State-owned enterprises
SRB	Serbia
SUMP	Sustainable Urban Mobility Plan
TCT	Transport Community Treaty
TDA	Transport Decarbonization Alliance
TEN-T	Trans-European Transport Network
TEU	Twenty-foot equivalent unit
TCO	Total Cost of Ownership
UNEP	United Nations Environment Programme
VAT	Value Added Tax
VNR	Voluntary National Review
VOC	Volatile organic compound
WB6	Western Balkan Six: Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia
WBEM	Western Balkans - Eastern Mediterranean corridor
WBIF	Western Balkans Investment Framework
WHO	World Health Organization
XKX	Kosovo

Executive Summary

Supporting green growth in the six Western Balkan Countries: The role of sustainable transport

The six Western Balkan countries (WB6) are at a decisive point regarding maintaining growth while managing to green their economy and tackling climate change induced challenges. The transport networks and cities built today will set patterns of pollution, energy consumption, and population density for decades to come. Pursuing a business-as-usual growth model after COVID-19 and the price shocks, especially in the energy sector after Russia's invasion of Ukraine, carries the risk of locking in growth on an unsustainable trajectory (World Bank 2021) and would entail irreversible implications. In this context, the transport sector must be interpreted as a key component of a green, resilient, and inclusive development agenda for the WB6, both through its critical role in supporting economic growth and inclusion, and as a vital sector for climate action and energy security by reducing fossil fuel dependency.

The window for investing in sustainable transport infrastructure and services in the WB6 is now. Transport systems in the WB6 are at a critical decision point for determining development trajectories and climate impacts. In the transport sector, critical examples of this are the rapid increase in motorization, exacerbated vulnerability to climate shocks and the loss of railway modal share in the region. Fortunately, there are investment and policy options that can generate jobs and economic growth while ensuring a resilient and inclusive transition toward a green economy.

With this report the World Bank intends to inform how the transformation of the transport sector in the Western Balkans offers an opportunity to improve regional connectivity, facilitate regional trade among the six Western Balkan countries and with the European Union (EU), reduce dependency on energy imports, improve health for its citizens, and shape more inclusive and productive urban areas, while also reducing GHG emissions. Overall, this report looks into how the transport sector can contribute to the green growth agenda of Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia (jointly referred to as WB6). This report focuses on land transport,[1] and relies on extensive data collection, policy documents, reports, and literature review. It discusses the need to create an enabling planning environment and then focuses on three pillars of strategic actions for green growth in the transport sector:

1. **Managing Road Vehicle Emissions:** aimed at reducing energy consumption and emissions in the road vehicle sector, which accounts for around 70 percent of oil consumption, is one of the main contributors to local pollution in urban areas, and accounts for 95 percent of transport GHG emissions in the WB6,[2] through policies to manage road vehicle emissions and embracing e-mobility. A more detailed analysis of policy actions pertaining to Pillar 1 is presented in the World Bank report Policies to Improve the Environmental Performance of Road Vehicles in the Western Balkans (World Bank 2024).

[1] This report focuses on domestic land-based transport (including road, rail, and waterways) and therefore does not discuss the opportunities for transport to support green growth through the aviation or maritime subsectors.

[2] World Bank calculations based on data from the Organization for Economic Co-operation and Development (OECD) 2021 and the International Energy Agency (IEA) 2022.

2. **Efficient Regional Integration:** aimed at improving the connectivity within the WB6 and its neighboring countries, facilitating trade, and increasing the resilience of transport infrastructure in a region prone to climate shocks (losses from climate disaster have reached 14 percent of GDP in the region), and the regional integration between WB6 countries and its neighbors through multimodal transport corridors. This Pillar underscores the relevance of complementing infrastructure investment programs with a range of institutional reforms and capacity building to pursue a transport system that is not only environmentally and socially sustainable, but also financially.

3. **People-centered Urban Mobility:** aimed at supporting a more sustainable trajectory for people-centered urbanization, by shifting urban mobility to cleaner and more inclusive modes, while addressing major challenges in urban areas, such as air pollution and congestion. This Pillar also highlights the critical role of unleashing the synergies between the public and the private sector to facilitate the deployment of sustainable transport solutions.

This executive summary presents an overview of these pillars and their rationale, with a full list of strategic actions provided in the table at the end.

International and regional momentum is building for a green transition for the transport sector, recognizing the need to reconcile economic and social development with a low-carbon trajectory, while integrating with the Common Regional Market. Trade within the region and with EU has increased over the past years, but it remains well below its potential. Transport deficiencies undermine the competitiveness of the Western Balkans economies. For the WB6, the EU's climate and economic agenda will be a key driver for the region's accession ambitions and will influence its growth model. In particular, the EU Green Deal (European Commission 2021) heightens commitments to decarbonize all sectors of the economy and sets clear policy benchmarks for climate action in the EU and neighboring regions, particularly through the country accession process (European Commission 2020). The Green Agenda for the Western Balkans and the accompanying Economic Investment Plan, both ratified through the Sofia declaration, will mirror those targets in the WB6; and the COP26 negotiation outcomes requested governments to strengthen their Nationally Determined Contributions (NDCs) to align them with the Paris Agreement goals (Chatham House, The Royal Institute of International Affairs 2022). Transport is also an important component of the recently approved EU New Growth Plan for the Western Balkans. This authorizing environment recognizes that connectivity is crucial for inclusive economic growth and identifies mobility as a critical pillar in the process of decarbonization and resilience. Furthermore, among WB6 countries, the transport sector averaged 15 percent of total GHG emissions in 2021, and these emissions are rising.

Aligning with Green Deal targets will require fundamental changes to the WB6 economy as well as the EU economy and will spur economic benefits to the WB6 countries. The short-term costs of alignment with the EU climate policy package and implementing EU environmental acquis will be high, and massive investments for infrastructure and policies are needed, but the longer-term benefits to accession countries will be higher than the costs (World Bank 2021).The EU envisages a multi-pronged approach comprising pricing measures, targets, and regulations to reach these ambitious targets—collectively called "fit for 55" (European Commission 2021a). Of relevance to the transport sector are the extension of the EU Emissions Trading System (ETS) to road transport and the removal of exemptions for maritime and aviation sectors; the Effort Sharing Regulation, introducing stronger emission reduction targets; stronger CO_2 emissions standards for cars, vans, buses, and trucks, which will accelerate the

transition to zero-emission mobility by 2035; and a revision of the Energy Taxation Directive, which is likely to reverse the current tax preferences for diesel over petrol. The WB6 Transport Community[3] has set out a Strategy for Sustainable and Smart Mobility with a vision for greening transport in line with these ambitions (Transport Community 2021). This policy environment will entail a rethink of the development approach for the transport sector in the WB6 and critical tradeoffs concerning the pace and nature of pursuing a greener long-term trajectory or a people-centered trajectory. For The WB6 countries, the green economic transition offers opportunities through closer integration with European global value chains, as well as access to significant EU resources to help fund a green transition.

Achieving these ambitious targets and policies urgently requires a fundamental shift in the institutional and planning environment, which will also require a series of reforms and higher participation of the private sector. Sustainable development of the transport sector will need reforms of state-owned enterprises (SOE) and market-orientated approaches for transport modes to develop customer bases including enhancing public-private investment opportunities. Moreover, coordination between national and local governments, regional collaboration, and capacity-building, especially at the local level, are needed. As part of an enabling planning environment, explicit GHG emission mitigation targets for all transport modes must be stated in NDCs. In turn, explicit targets for the transport sector must be operationalized in national plans and strategies. National governments should consider supporting subnational (municipal) governments with funding and an enabling policy environment. There are challenges ahead for such a transport transition. Decisions by governments to not to act will lead to negative economic impacts and transport lagging further behind European's implementation of the Green Agenda. For example, not effectively restricting the import of secondhand vehicles will lead to slowing down the change towards cleaner fleets and finally electrification of the sector.

In the move to green transport systems, it is important that there is an inclusive and just transition. Many of the outlined measures are likely to increase the cost of transport provision during the low-carbon transition and will also cause a shift of the labor force. To prevent existing gaps widening, emerging benefits and burdens must be fairly distributed among population groups and special attention will be needed to ensure that the losers of the transition are not left behind. For example, revenues from increased fuel levies could be used to protect vulnerable communities and small businesses that may be unable to manage these price increases. This could also be done with progressive cross-funding support to greener and more inclusive modes such as non-motorized transport, public transport, or rail. As it pertains to the labor force, the political economy of the shift to greener technologies like e-mobility entails both a risk, but also an opportunity that countries must prepare for. However, while e-vehicles are currently considered a very important way to decarbonize the sector, they are not the only solution to the transport decarbonization agenda in the medium term. Acknowledging the role that people-centered and gender-informed policies can play in meeting climate action plans is very relevant for the green transition (World Bank 2022).

Pillar 1: Managing road vehicle emissions: modernizing the road vehicle fleet

Prioritizing a transition to a cleaner road vehicle fleet is key to reducing the region's dependency on oil product imports, reducing local pollution in urban areas, while also reducing GHG emissions and

[3] An International Organization in the field of transport and mobility, with the EU states and the WB6 regional parties as members (see https://www.transport-community.org/about/).

ensuring sustained access to the EU market. While vehicle ownership is still significantly lower than the EU average (309 vehicles per 1,000 inhabitants vs. 571 vehicles for the EU in 2023),[4] all WB6 countries fleets are growing rapidly, with exacerbated examples such as Albania with 114 percent between 2013 and 2023 (Figure ES 1). The growing road transport sector contributes significantly to local pollution in the region, mainly due to an ageing fleet (Figure ES 2) with poor environmental standards, with more than 70 percent of passenger cars being diesel-fueled, and low quality of fuels. For instance, between 45 and 65 percent of vehicles registered in Albania, Montenegro, Kosovo, and North Macedonia are still of Euro 3[5] standard or lower. Also, in terms of global emissions (GHG) efforts to move away from the legacy carbon-intensive road sector must be intensified, as around 95 percent[6] of the transport GHG emissions come from the road sector. Furthermore, WB6 countries will need to create incentives for their passenger and freight fleet to shift to standards compatible for operation with the EU, or they may have limitations when conducting trade with their most important trade partner, the EU.

Figure ES 1. WB6 motorization rates

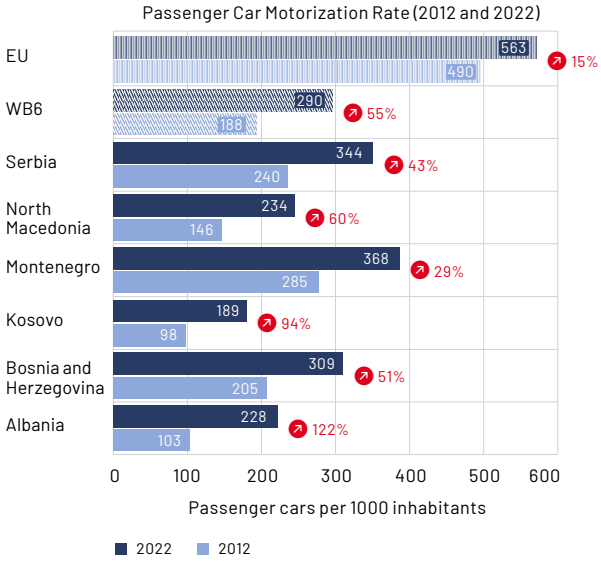
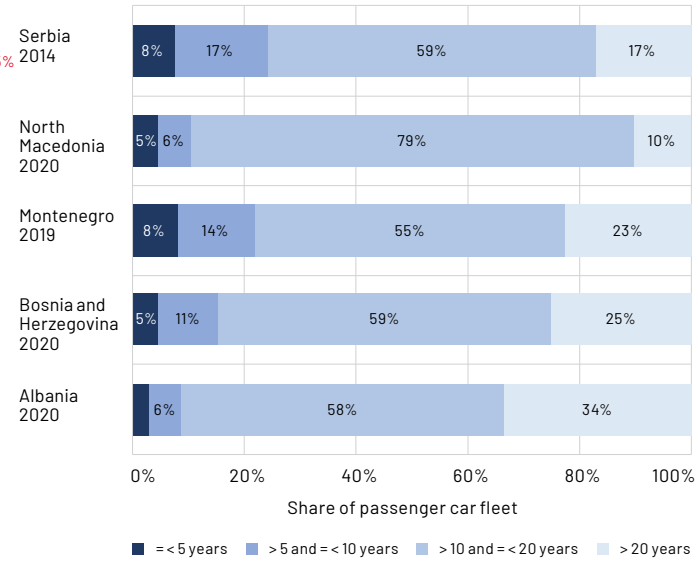


Figure ES 2. Proportion of passenger car fleet by age bracket



Sources: Figure ES 1: Eurostat 2023; Agency for Statistics of Bosnia and Herzegovina 2024: Figure ES 2: World Bank 2024a.

In addition to passenger cars, heavy-duty vehicles (trucks) and intercity buses (coaches) contribute disproportionately to road transport emissions. Globally heavy-duty vehicles are responsible for 25 percent of road-based GHG emissions even though they only represent 1 percent of the fleet (Hamidi and Meroño 2021). In WB6 countries, the vast majority of freight is transported by road, with the truck fleet also made up of old, highly polluting vehicles, having relevant impact on local pollution.[7] As freight transport volumes on the road increase in the WB6 countries (OECD 2021a), governments should consider implementing stricter regulation standards for heavy-duty vehicles (European Commission 2019), and defining targets for fleet-wide average CO_2 emissions of newly registered trucks for manufacturers.

[4] World Bank calculations based on Eurostat 2023 and the Agency for Statistics of Bosnia and Herzegovina 2024.

[5] The EU introduced the 'Euro' emission standards, starting with 'Euro 1' in 1992. Subsequently, successively stricter standards 'Euro 2' to 'Euro 6' have been introduced. Vehicles classified as Euro 3 or lower emit significantly higher amounts of CO, NO_x, and PM per km driven, compared to current EU standards.

[6] World Bank calculations based on data from the Organization for Economic Co-operation and Development (OECD) and the International Energy Agency (IEA).

[7] Overall, about 57% of Heavy-Duty Trucks in the Western Balkans fleet are still Euro 3 or lower (World Bank 2024a)

Aligning with standards compatible for operation in the EU is also important to avoid limitations when conducting trade with the EU. In order to financially support the process of shifting toward cleaner vehicles, a scrappage scheme for small capital-constrained enterprises could be envisioned (Transport for London n.d).

Vehicle and fuel taxation presents significant potential to steer the market toward less energy- and carbon-intensive vehicle technologies. Exploring opportunities for increasing fuel taxation and introducing differentiated vehicle taxation based on environmental performance (accompanied by distributional policies to mitigate negative equity implications), can not only help mitigate transport sector emissions in WB6 countries, but may also provide an important additional revenue source for national governments. These revenues could subsidize the shift to more sustainable transport modes or to lower emission vehicles and support a just and inclusive transition.

Decarbonizing the road vehicle fleet will require strengthening the regulatory framework on vehicle emissions, with concerted action to lower emissions from Internal Combustion Engine vehicles while preparing the way for e-mobility in the future. Currently the WB6 import large quantities of used vehicles, often from the EU. Consequently, strengthening vehicle import standards and incentives to renew the fleet will be key short-term measures to reduce emissions and air pollution. The management of vehicle fleets once in use—including inspection, enforcement, and maintenance—is just as critical as the regulation of vehicle sales.

Accelerating the uptake of e-mobility requires policies that help reduce the barriers posed by high upfront cost. The early electrification of highly utilized vehicles (high mileage) can be a key enabler of cost-effective deployment of electric vehicles across different modes of transport, ultimately driving private investments. This is due to higher savings from energy costs likely offsetting higher upfront expenditures. These policies can also stimulate early investments in the deployment of charging infrastructure. Improved governance and policy frameworks are also important to foster private and publicly accessible charging infrastructure, including not only technical standardization and licensing of charging points to facilitate interoperability, but also the introduction of targets for both on-street and off-street charging. Finally, while electric mobility is the most market ready, infrastructure for alternative fuels, such as hydrogen, will also need a framework for deployment.

Delivering clean energy, strengthening electricity grids, and managing the environmental impact of e-vehicles, will also be key pieces of the transition to e-mobility. With the EU directives around 'zero-emission vehicles' (2019/1161/EU), the greatest challenge will be decarbonizing energy supply systems away from fossil fuels and strengthening electricity grids to handle the additional loads of running e-vehicles, while scaling up charging infrastructure. Ensuring the alignment of the legal framework for e-mobility with EU environmental standards is key for ensuring interoperability and full market integration in the future. WB6 countries will need to create strategies to manage the environmental impacts of e-vehicles both in production and the management of used batteries.

Pillar 2: Efficient regional integration: improving sustainable connectivity, facilitating trade, and increasing infrastructure resilience.

Transport deficiencies undermine the competitiveness of the Western Balkans economies. Transport deficiencies in the Western Balkans impact the efficient flow of freight both within the region and with the EU neighbors resulting in higher trade costs, which further hampers the competitiveness of the economies and inhibits their attractiveness for new investments. Moreover, the lack of connectivity and delays at border crossings both for rail and for road also negatively impacts tourism. Better road and rail infrastructure will improve opportunities for the six Western Balkan countries and allow them to become more attractive for EU manufacturers to expand their production and create new green jobs.

Development over the last two decades has been strongly imbalanced in favor of infrastructure investments toward road transport, with some WB6 countries allocating close to 100 percent of their transport infrastructure expenditures to roads. The railway sector currently faces severe issues of reliability, quality of services, and lack of compliance with Trans-European Transport Network (TEN-T) standards. At the same time, the number of passenger-km travelled by train has declined significantly in all WB6, and freight traffic is increasingly dominated by the road sector (see Figure ES 3 and Figure ES 4) Without action to reduce the reliance on road transport and to trigger modal shift to more sustainable modes of intercity travel, carbon emissions in the region will continue to rise and improvement of interconnectivity and logistic chains' efficiency will be hindered (Statistical Office of Montenegro 2021) (Eurostat 2021).

Figure ES 3. Modal split of inland freight transport by road, rail, and inland waterways in Serbia

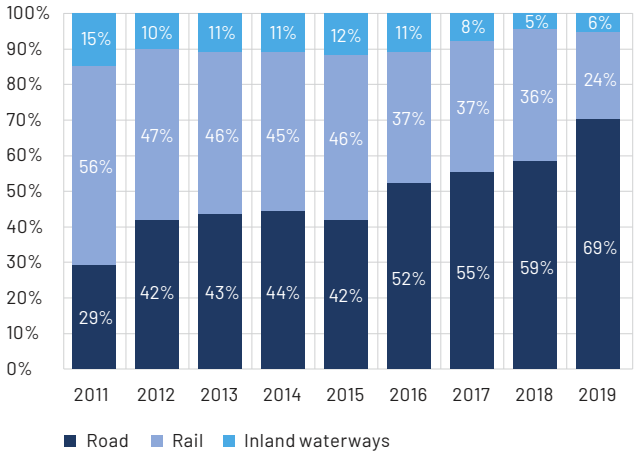
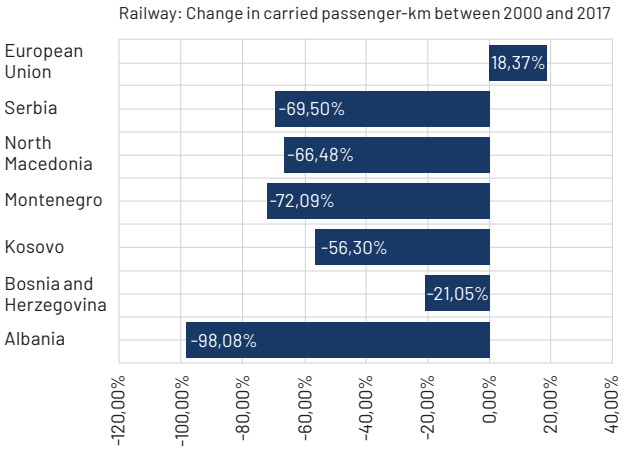


Figure ES 4. Change in rail passenger transport in the WB6 countries and in the EU



Sources: Figure ES 3: OECD 2021b; Figure ES 4: World Bank 2020; Kosovo Statistical Agency 2021; Statistical Office of Montenegro 2020; Eurostat 2020.

Future investment must be directed at developing the region's core and comprehensive TEN-T network as resilient backbone of national and international transport systems and at incentivizing the shift toward low carbon modes such as rail and inland waterways. Developing an efficient and regionally integrated system will require the improvement, maintenance, and expansion or revitalization of existing rail, inland waterways (e.g. Sava and Drina River Corridors), and resilient road infrastructure, including intermodal facilities. Revision of institutional and regulatory frameworks, including shipping

regulations and labor and tax conditions, will also be needed. Furthermore, efforts shall be considered with an approach that combines trade facilitation and upgrading transport and connectivity infrastructure. Harmonization of technical standards and border crossing regulations across the region will enable more efficient logistics and boost economic development. Better road and rail infrastructure will improve opportunities for WB6 countries and allow them to become more attractive for EU manufacturers to expand their production and create new green jobs. At the same time, a reform of state-owned enterprises (SOE) in the transport sector (particularly in the rail sector, but also roads) and encouraging private participation where appropriate and divesting non-core business activities—would allow a more market-driven approach and increase efficiency.

Climate resiliency and improved geohazard vulnerability must be considered at all stages of infrastructure development and maintenance. The WB6 is one of the regions in Europe most heavily affected by the impact of climate change, increasing the risk for extreme weather events that provoke riverine floods, landslides, or wildfires and leaving transport infrastructure increasingly exposed (World Bank 2018) (Xiong and Espinet Alegre 2019). In Serbia alone, about 12,000 km of road infrastructure and 900 km of railway are directly exposed to potential flood risk (World Bank 2021a). After the 2014 floods, the estimated cost for all damages in the transportation and communications sector in Bosnia and Herzegovina accounted for a total of 262 million euros (World Bank 2020a). Routine maintenance, inspections, and collection of data on asset conditions as well as hazard monitoring are critical measures for improving resilience and supporting the free movement of people and goods. Regulations at national level must be enforceable at a local level, as local roads and streets provide access to and from areas affected by natural disasters. Raising climate risk awareness, improved capacity-building at local levels, and financial and technical support are key measures besides physical improvements and maintenance of infrastructure.

Pillar 3: People-centered urban mobility: clean and sustainable mobility for all

WB6 cities underpin the region's economic development and ought to be magnets for jobs and opportunities. However, major cities in the region have not developed their full potential of driving growth and creating jobs (World Bank 2019), and continue to lose youth and skilled population. Thus, tackling congestion, poor air quality, and inclusive access to jobs and services will be central to creating livable cities. According to the World Air Quality Report 2023, 8 out of the 15 most polluted cities in Europe are to be found in the WB6 (World Bank 2019a) (IQAir 2024).Transport is acknowledged to be a significant contributor to local air pollution,[8] typically leading nitrogen oxide emissions and is one of the greatest, if not the greatest (Tirana), contributors to $PM_{2.5}$ emissions along with domestic heating and energy production (Bosetti, Chiffi, Pechin, and Uccelli 2020). Traffic is reported to be the dominant source of heating off-season emissions, and its impact on pollution is significant throughout the year. Air pollution comes at high social and economic costs, causing 4–19 percent of total premature mortality (Daul, Kryzanowski and Kujundzic 2019) in the region and resulting in significant GDP losses. Moreover, the share of transport in CO_2 emissions is increasing at a fast pace (see Figure ES 5).

[8] Transport is responsible for 20 percent of $PM_{2.5}$ emissions in Tuzla (2020/21) or 46 percent of nitrogen oxide emissions in Skopje (2016) (World Bank 2019b)

Figure ES 5. Share of transport in total CO_2 emissions in selected cities

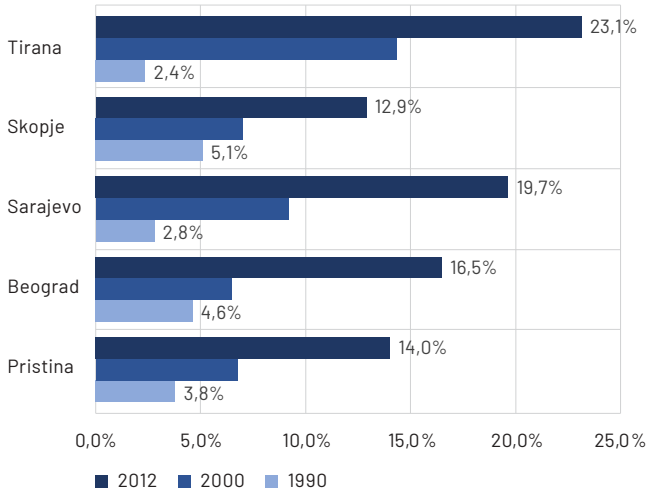
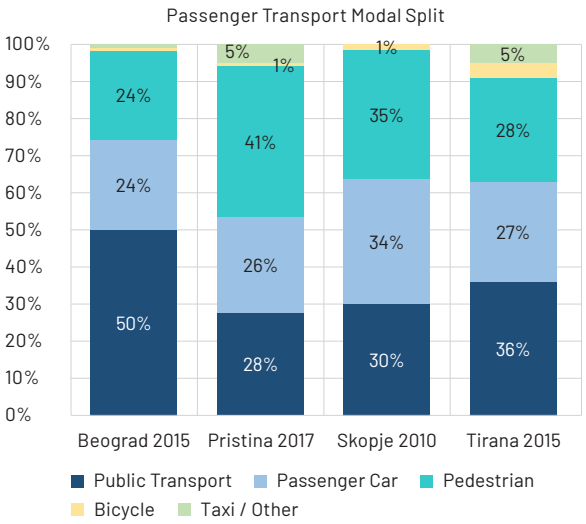


Figure ES 6. Modal Split in different cities



Source: Figure ES 5: Joint Research Centre 2019; Figure ES 6: [Belgrade]: Belgrade City Administration 2021; [Pristina] Mott MacDonald 2019; [Skopje]: Cavoli 2017; [Tirana]: City of Tirana 2018.

Urban development should be people-centered, building compact and mixed-use structures, fostering green transport modes, and regulating individual motorized traffic. Additionally, WB6 cities still have relatively low motorization rates, are compact and of intermediate size. However, there is a trend of low population growth in larger cities and decline in smaller cities, while the urban footprint is sprawling, which poses a significant challenge to sustainability and efficient provision of transport services and infrastructure. Despite the challenges, they are still in a relatively good position to take early action to maintain and increase the share of greener and more inclusive modes, such as public transport, walking and cycling (see Figure ES 6). Revising zoning and land-use regulations to limit urban sprawl and implementing integrated land-use and transport planning must is needed to improve cities' competitiveness and sustainable mobility.

Adopting and implementing Sustainable Urban Mobility Plans (SUMPs) should be the first step in efforts to strengthen the attractiveness of greener transport modes. Whereas all WB6 capital cities have adopted SUMPs, many others are to develop them. These may include the development of prioritized low-carbon public transport corridors and ensuring safe, inclusive, and attractive walking and cycling infrastructure. Simultaneously, these measures must be accompanied by smart mobility measures, including demand management, efficient parking management, and vehicle access regulations in certain areas of the cities, coupled with behavioral and enforcement actions. Cities should, for example, consider low-emission zones or pedestrian-first streets as measures to effectively limit local emissions of air pollutants and increase the quality of public space. While cities have a huge potential to act themselves, national governments play a key role in enabling cities to act. National Urban Mobility Policies, making SUMPs obligatory, providing national funding for urban transport systems, and national emission standards are crucial for improvement of urban transport systems.

Improvements to public transport infrastructure, services and transit vehicle fleets are key to ensuring a people-centered urban mobility system and to providing a reasonable alternative to the private car. There is a concerning deficit in investment in public transport in WB6 cities. Along with

the renewal of the public transport fleet, including the deployment of electric vehicles, it is critical that public transport services have priority in flowing traffic and that service times, frequency, accessibility, and information meet the needs of all groups of the urban population, including the vulnerable, children, the elderly and persons with disabilities. In this context, capacity building of civil society and closer cooperation with planning authorities is needed. There is also a clear opportunity for decarbonization if planning and investing in transport systems is people-centered, thus considering the mobility patterns of all users, and particularly those of women as their mobility habits are on average greener (Kronsell, Smidfelt Rosqvist and Winslott Hiselius 2016). Cities and operators cannot afford to lose their female public transport market segment, as they are the largest regular user group (e.g., 68 percent in Pristina). Improving services for existing users—including the promotion of shared mobility and the improved regulation of current informal transport services into the regular transport supply—will expand accessibility to all and sustain public transport operations.

City governments need to develop robust municipal financing to invest in and sustain the urban transport systems. As most urban mobility infrastructure and services are public goods, municipal governments should seek opportunities to secure sustainable financing, either through direct investment or operational subsidies, and make efforts to attract additional investment and raise additional funding for the sector. The governments should consider capturing a portion of the land value increase as a source of financing for public transport improvements. This can be achieved through increased property tax assessments, business improvement districts, and public-private partnerships (PPPs) for nearby developments. Central government also plays a pivotal role in catalyzing local investments through grant schemes to incentivize innovations. Well-designed fiscal architecture and central government programs, such as grants or viability gap financing, can serve as important financing sources to encourage local investment in public transport.

Cities in the WB6 can do more to expand the participation of the private sector in infrastructure, services, and emerging transport modes. Attracting private sector funding can complement the own cities' efforts to address the challenges of delivering and financing urban mobility projects. Achieving this will require establishing adequate national regulatory frameworks. Public-private partnerships (PPPs) could take different forms (e.g., Build-Operate-Transfer, concession agreements, or joint ventures) and cover multiple areas, including parking management, ticketing and information systems, construction and operation of bus shelters and terminals, shared services and micro-mobility, and urban bus systems. Ensuring a successful and effective application of PPPs requires the structuring of high-quality concessions, which in turns needs technical, institutional, regulatory and fiscal capacities. A comprehensive approach to public transport sector governance is needed, including the establishment and strengthening of responsible institutions, and private sector participation needs to be facilitated through market competition and appropriate contracts.

WB6 cities should explore implementing concession-based public transport models to improve both quality and environmental performance of urban bus transport services in the region. Moving to concession models, where the city pays for the service provided (e.g., bus-km) rather than for the capital cost of buses, allocating risks between government and concessionaire efficiently and appropriately; and ensuring that concessions are truly competitive and open (avoiding incumbent capture) would enhance the financial viability of the e-mobility transition for urban buses. Moreover, if cities can coalesce around a standardized Western Balkans concession it would have the added benefits of creating a regional market, which would in turn increase bankability giving operators and their financiers alike confidence of a secondary market for buses bought to support a concession.

Priority strategic actions in the transport sector toward green growth in the WB6

The following table provides a summary of proposed actions that WB6 countries should consider prioritizing to support green growth through the transport sector.[9]

Creating an enabling environment
• Set mitigation targets for the transport sector in NDCs and operationalize them in national strategies • Create a National Urban Mobility Policy to support city governments in the planning and implementation of sustainable mobility. Couple with improved municipal finance capabilities. • Strengthen planning for emissions mitigation at the city level: Sustainable Urban Mobility Plans, Green City Action Plans, and Air Quality Action Plans. • Implement a resilient lifecycle approach to climate adaptation and geohazard risk management that comprehensively assesses risk, identifies network vulnerability, and improves maintenance practices. • Adopt protocols for data collection, analysis, and regular benchmarking of performance of transport infrastructure and services for all users. • Prepare for the digitalization of infrastructure. • Continue to foster regional collaboration among countries and encourage policy learning across cities to strengthen the local economy and creating new sustainable jobs. • Supporting national governments identify public-private partnership opportunities and an enabling funding policy for green national and subnational agendas.

Pillar 1: Managing Road Vehicle Emissions	
Short-term and medium-term actions designed ***to manage road vehicle emissions***	
Strategic actions	**Policy actions**
Reform vehicle and fuel taxation	• Introduce differentiated taxation schemes with higher rates for more polluting vehicles, both for vehicle registration and circulation taxes. • Gradually increase fuel levies to incorporate carbon pricing. • Gradually increase fuel levies on diesel relative to petrol to reduce pollution.
Strengthen and enforce regulatory requirements	• Enforce stricter emission standards for both light- and heavy-duty vehicles. • Set stricter import standards for secondhand vehicles. • Define vehicle inspection and maintenance standards and ensure their enforcement. • Establishment of Motor Vehicle Information Management Systems. • Define age limits for road vehicles and support their replacement through end-of-life vehicle programs.
Accelerate e-mobility rollout	• Introduce gradual regulatory requirements with minimum levels of electric vehicles in highly utilized fleets. • Improve the governance around e-mobility policy framework and infrastructure, with clear responsibility allocation and coordination across institutions. • Provide tax and other incentives for the use of e-vehicles. • Roll out electric charging infrastructure in cities and along expressways, with increased private sector participation. • Develop import standards for secondhand e-vehicles • Shift energy supply to renewables and strengthen electricity grids. • Plan for reforms of the road sector's revenue streams

[9] A more detailed description of the strategic actions is presented in the World Bank's working paper '*Transport Inputs to the Western Balkans Green Growth Narrative*'.

Pillar 2: Efficient Regional Integration

Short- to long-term actions to ***improve sustainable connectivity, facilitate trade, and incrementally increase infrastructure resilience, promoting the modal shift to rail and inland water transport***

Strategic actions	Policy actions
Align national transport plans with TEN-T and support intermodal facilities along strategic corridors.	• Enhance transport connectivity with a combined approach of transport infrastructure and trade facilitation. • Improve the resilience of the TEN-T network. • Operationalize NDCs in transport strategies and asset management. • Invest in intermodal terminals along the TEN-T corridors and encourage private sector investment in intermodal terminals and logistics facilities.
Focus investment in the transport sector on resilience, interconnectivity, and management	• Review national design standards to ensure they reflect current climate risk. • Undertake resilience assessments to identify network vulnerability. • Simplify road network vulnerability screening for the local-level road network and operationalize climate resiliency plans. • Enhance capacity for regular maintenance.
Improve market orientation of transport operators and encourage private participation	• Reform transport state-owned enterprises, enable their access to finance, appoint professional boards of directors, and divest state-owned enterprises of non-core business activities. • Remove regulatory barriers to cross-border flows of goods.
Shift investment from road to rail and inland water transport	• Revitalize and expand rail infrastructure through investment, improving service quality and competitiveness for both passenger and freight transport. • Invest in navigation infrastructure and implement policies to improve logistics performance and safety. • Facilitate rail, inland waterway, and intermodal freight transport through harmonization of legal and technical standards in the region.

Pillar 3: People-Centered Urban Mobility

Short and medium-term action to ***ensure a clean and sustainable urban mobility system for all***

Strategic actions	Policy actions
Revise regulations to encourage greater transport-orientated development	• Aim at compact city structures with mixed uses and at integrating land-use and transport planning. • Create Sustainable Urban Mobility Plans and implement them. • Introduce and enforce parking management systems. • Reallocate street space to public transport, cycling, and walking.
Invest in active mobility as the greener and most inclusive mode	• Define clear objectives and dedicate human and financial resources to active mobility. • Ensure that investments do not only comprise infrastructure but also supportive soft measures (enforcement, safety trainings, behavior...). • Implement low-emission zones and/or pedestrian-first streets.
Improve public transport services	• Reform public transport provision to meet modern standards. • Invest in the modernization of public transport fleets and infrastructure. • Give priority to public transport services in flowing traffic.

Integrate smart mobility systems	• Explore options for the implementation of intelligent transport systems for public transport service provision, road asset management, and traffic control. • Improve processes for data collection and processing.
Improve municipal financing and leverage private sector participation in urban mobility	• Develop robust municipal financing • Establish adequate national regulatory frameworks for private sector participation in urban transport. • Extend Public-Private Partnerships (PPPs) to diverse applications: parking management, ticketing and information systems, construction and operation of bus shelters and terminals, shared services and micro-mobility, and urban bus systems • Explore transitioning to concession-based public transport models

Introduction

The six Western Balkan countries (WB6) are at a decision point regarding how to continue growing their economy and delivering its development objectives, while adapting to the effects of climate change and reducing local pollution and Greenhouse Gas emissions (GHG), and how the transport sector can support these multiple objectives. The European Green Deal and the European Commission's Economic Investment Plan for the Western Balkans (European Commission 2020a) as well as the WB6's own Sustainable and Smart Mobility Strategy recognize that connectivity is crucial for inclusive economic growth and identify mobility as a critical pillar in the process of decarbonization and resilience. The EU Green Agenda for the WB6 promotes increasing rail capacity, deploying more environmentally friendly transport modes, especially in urban areas, as well as smart mobility solutions. This notion was endorsed by the WB6 in the Sofia Declaration of 2020, with actions in the transport sector being prominently highlighted. And in July 2021, the Transport Community catalyzed regional dialogue on the need to have a Sustainable and Smart Mobility Strategy for the Western Balkans to mirror the EU Sustainable Mobility Strategy (European Commission 2020b). This represents a major step toward ensuring that WB6 countries plan for sustainable transport in a way that is aligned with EU plans and targets but accounts for their highly carbon-intensive economies, status quo mobility systems, and expected increases in travel demand and Greenhouse Gas (GHG) emissions that could come with economic growth.

Yet, strategic actions in the transport sector must be guided by a stronger evidence-based narrative that clarifies the sector's contributions to green growth in the WB6. To spur an effective and balanced green transition for the transport sector, it is germane to recognize the need for a tailored transition path for the WB6 region and for each of its countries. The region has specific challenges and opportunities in the transport sector; given its geography with countries of small size and some of them landlocked, along with the political nuances of recent conflict, and it demands a joint effort among all WB6 countries, the EU, and relevant stakeholders (including the World Bank and development partners) to align on a narrative and identify high-yield green opportunities for the sector. In addition, the narrative ought to be based on data and evidence systematically collected and analyzed. While there is some data and analytics advanced by countries and international organizations, the body of knowledge on the link between transport and green growth in the WB6 is limited. Therefore, there has been a historic challenge in substantiating the relevance of the sector and the data to inform the agenda in a systematic, comparative manner.

This Report provides an evidence-based conceptual framework that explicitly addresses the link between climate action (in terms of both mitigation and resilience) and inclusive economic development for the transport sector in the WB6. Using this framework, it recommends policy actions for the near- and mid-term that can help support this vision for the region. This report also provides useful narrative to help relevant national and international stakeholders make the case for how the transport sector can contribute to green growth in the WB6. The document builds on a large-scale effort to collect and analyze data and relevant literature from various sources.

EU Accession and Global Momentum

International and regional momentum is building for a green transition for the transport sector, recognizing the need to reconcile a low-carbon transport transition with economic and social development. The EU's climate and economic agenda will be a key driver for the WB6 in terms of their accession ambitions. In particular, the EU Green Deal (European Commission 2021) heightens commitments to decarbonize all sectors of the economy and sets clear policy benchmarks for climate action in the EU and neighboring regions, particularly through the accession process (European Commission 2020). The targets for the green deal include net zero GHG emissions by 2050 and a 55 percent reduction in GHG emissions by 2030 from the 1990 baseline. The EU Green Deal is also an important opportunity for receiving funding and support for institutional strengthening and capacity, a pathway for improved competitiveness in regional and international trade, and an opportunity to support more inclusive economic growth in the WB6. Transport is also an important component of the recently approved EU New Growth Plan for the Western Balkans.

The implementation of the EU Green Deal will be mirrored in the WB6 by the Green Agenda for the Western Balkans and the accompanying Economic Investment Plan, both ratified through the Sofia Declaration. Leaders from the WB6 affirmed in November 2020 their "will to align as swiftly as possible with the EU's energy, climate and environmental policies and the long-term objectives of the Paris Agreement, by this contributing to the well-being of citizens and the sustainable development of the region" (Regional Cooperation Council 2020). In this declaration, WB6 countries acknowledged the need to set the basis for a major transformation of the region to turn sustainability and resilience challenges into opportunities, with actions in the transport sector being prominently highlighted.

Achieving Green Deal targets will require a fundamental change to the EU economy and by extension a fundamental change to the economies of anyone wanting to trade with the EU, including the WB6. The EU envisages a multi-pronged approach comprising pricing measures, targets, and regulations to reach these ambitious targets—collectively called "fit for 55" (European Commission 2021a):

a. The **EU Emissions Trading System (ETS)** puts a price on carbon and lowers the cap on emissions from certain economic sectors every year. The proposal is to lower the overall emission cap even further and increase its annual rate of reduction. Since January 2024 this was extended to cover emissions from the maritime sector, free emission allowances for aviation are under revision, and a new emissions trading system will be set up for fuel distribution for road transport (ETS2). A dedicated part of the revenues from the new system for road transport should address the possible social impact on vulnerable households, micro-enterprises, and transport users.

b. The **Effort Sharing Regulation** assigns strengthened emissions reduction targets to sectors including road and domestic maritime transport.

c. The **Renewable Energy Directive** will set an increased target to produce 40 percent of energy from renewable sources by 2030 with specific targets for renewable energy use in different sectors including transport.

d. **Stronger CO_2 emissions standards for new vehicles** will accelerate the transition to zero-emission mobility by requiring average emissions of new cars to come down by 55 percent from 2030 and 100 percent from 2035 compared to 2021 levels. For Heavy Duty Vehicles, the most stringent CO_2

emission standards globally were approved by the European Parliament in 2024, requiring a 90 percent reduction in tailpipe CO_2 emissions from trucks by 2040 compared to 1990 levels.[10]

e. The **Alternative Fuels Infrastructure Regulation** requires that aircraft and ships have access to clean electricity supply in major ports and airports.

f. **A revision of the Energy Taxation Directive** proposes to align the taxation of energy products with EU energy and climate policies, promoting clean technologies and removing outdated exemptions (e.g., for aviation and maritime) and reduced rates that currently encourage the use of fossil fuels. One proposal is to reverse the current tax preferences for diesel over petrol.

g. Finally, a new **Carbon Border Adjustment Mechanism** will put a carbon price on imports of a targeted selection of products to ensure that ambitious climate action in Europe does not lead to pushing carbon-intensive production outside Europe.

This package of measures will have significant implications for the transport sector in the EU and by implication for the WB6 region. In addition, the EU's new Sustainable and Smart Mobility Strategy sets out ambitious targets for the transport sector to reduce emissions from the sector by 90 percent by 2050, primarily through technological improvements such as the large-scale adoption of zero-emission vehicles and a fully operational, multimodal Trans-European Transport Network (TEN-T) for smart, high-speed connectivity. More immediate targets for 2030 include having at least 30 million zero-emission cars in operation on European roads, 100 European cities[11] achieving climate neutrality (European Commission 2023), doubling high-speed rail traffic across Europe, deploying automated mobility at a large scale, and readying zero-emission marine vessels for market (European Commission 2020c).

The WB6 Transport Community's Strategy for Sustainable and Smart Mobility in the Western Balkans outlines a vision for greening transport in the WB6 as the region's response to the EU's Sustainable and Smart Mobility Strategy (Transport Community 2021). The WB6 strategy puts forward a set of flagship goals aimed toward achieving sustainable, smart, and resilient mobility for the region. It focuses on greening interurban and urban mobility by improving rail (both passenger and freight) and cycling infrastructure; improving maritime and aviation fuels; boosting the uptake of zero-emission vehicles and providing related fueling or charging infrastructure; and pricing carbon and providing better incentives for users across all modes of travel. To achieve smart mobility, the strategy focuses on better integrating and automating multimodal mobility to improve the passenger experience and boosting innovation by making use of data and artificial intelligence to shape passengers and freight movements. And to achieve greater resilience in the transport sector, the strategy proposes reinforcing the single market with the EU through investments in the TEN-T, improving transport safety and security across all modes, and addressing affordability and accessibility issues to ensure fair mobility for all. This approach is also supplemented with EU funds including the Instrument for Pre-accession Assistance (IPA) and the Western Balkans Investment Framework (WBIF).

[10] Regulation (EU) 2024/1610 of the European Parliament and of the Council of 14 May 2024 amending Regulation (EU) 2019/1242

[11] Three WB6 cities have been selected for the EU's "Net Zero Cities" mission: Elbasan (Albania), Sarajevo (Bosnia and Herzegovina) and Podgorica (Montenegro).

This Report

The World Bank presents this Report for the WB6 with the objective of providing an evidence-based policy narrative to showcase the opportunities for the WB6 transport sector to contribute to the green, resilient, and inclusive economic development (GRID) agenda. It discusses both passenger and freight transport. This is done with the lenses of supporting economic growth, while improving air quality and decarbonizing the sector, with inclusion and just transition principles, and with the objective of informing decision making over resource allocation for the WB6 and development partners. There is a redoubled need to invest in GRID to build back better from the COVID-19 global crisis and in the light of the Energy Crisis; and policies, institutional reforms, and investments in the transport sector will be an important contributor to a resilient, inclusive, and sustainable recovery. Furthermore, the Report intends to inform recommended approaches for a greater level of ambition for coordinated and individual country decarbonization and resilience action, while considering critical agendas such as inclusion and jobs. It concludes with recommendations for the WB6 to pay special attention to managing road vehicle emissions, efficient regional integration, and a redoubled emphasis to tackle the emerging urban mobility agenda.

With this Report, the Bank intends to inform the green growth agenda relevant to Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia, collectively referred in this Report as the six Western Balkan countries (WB6). The remaining chapters in the report are structured as follows:

a. **ENVISIONING A TRANSPORT SECTOR THAT CONTRIBUTES TO GREEN, RESILIENT, AND INCLUSIVE ECONOMIC DEVELOPMENT (GRID) IN THE WB6** describes the role of transport as a fundamental element of GRID for the WB6. With GRID as the long-term vision for economic and transport sector development, the chapter introduces three pillars of strategic action that, in the short and medium term, can help WB6 countries achieve this vision at the regional, national, and local level: i) managing road vehicle emissions; ii) efficient regional integration; and iii) people-centered urban mobility.

b. **CREATING AN ENABLING PLANNING ENVIRONMENT** discusses the importance of long-term planning, institution building, and ensuring an enabling environment for the transport sector to realize GRID in the WB6. This chapter highlights alignment among international, regional, national, and sub-national plans for transport, green economic development, and climate action. The chapter recommends specific actions regarding inter-governmental cooperation, policy learning and collective capacity-building, strengthening of municipal finance, data collection and analysis, and digitalization that provide the foundation for enabling successful implementation of all other strategic actions toward transport for GRID.

c. The following three chapters encompass the specific pillars for strategic actions in the transport sector in support of GRID: **PILLAR 1. MANAGING ROAD VEHICLE EMISSIONS, PILLAR 2. EFFICIENT REGIONAL INTEGRATION, AND PILLAR 3. PEOPLE-CENTERED URBAN MOBILITY.** For each chapter or pillar, we begin with an overview of the relevant transport context in the region, identifying key opportunities and challenges and providing the rationale and motivation for action. Then we lay out clear priorities, investments, and policy actions that policy makers can take to address existing issues and shape the transport sector to contribute to GRID.

This Report is expected to inform country agendas, the Bank's country partnership engagements, policy and investment lending operations, and collaboration with other relevant stakeholders including development partners. The Report sets a foundation for a Bank dialogue with WB6 countries regarding the role of investments and policies in the transport sector in supporting green growth. It intends to provide a basis for dialogue with national ministries in charge of finance, economy, transport, energy and the environment, as well as cities and other relevant local stakeholders. Furthermore, the Report sheds light on the opportunities for coordinated and effective action among development partners and the Transport Community toward pursuing a greener, less carbon-intensive and resilient transport sector[12] for WB6.

A note on data. The Report relied on extensive collection of publicly available data, reports, and literature. Numerous national and international statistical databases, reports, and strategies have been collected and summarized to gain a well-founded insight into the current situation in WB6 countries. Despite the efforts and due to severe limitations on both national and subnational data in terms of availability, quality, and comparability, analyses across the chapters vary with regards to the inclusion of specific countries, the time frames covered, and the level of dissaggregation. Having said that, to fullfil the objective of the Report as well as to deliver robust findings, data gaps wherever possible were bridged with supplementary data sources, and multiple sources were considered and consulted to corroborate key messages.

[12] This report focuses on domestic land-based transport (including road, rail, and waterways) and therefore does not discuss the opportunities for transport to support green growth through the aviation or maritime subsectors.

Envisioning a Transport Sector that Contributes to Green, Resilient, and Inclusive Economic Development in the WB6

As WB6 countries continue to manage the impacts of various global crisis, it is critical to maintain a line of sight to long-term goals of green, resilient, and inclusive economic development (GRID) (World Bank Development Committee 2021). Transport is a critical sector for achieving this vision.

The COVID-19 crisis, the energy crisis, and the invasion of Ukraine have had a strong negative impact on economic growth and the labor market in the WB6, with significant consequences for the transport sector (World Bank 2021b) (World Bank 2022a) (OECD 2020) (OECD 2020a). In 2020, all WB6 economies contracted, with GDP falling in each country for the first time in over a decade. The employment rate declined from 44.6 percent in December 2019 to 43.2 percent by end 2020, with youth and female unemployment being disproportionately affected. Although government support packages have prevented more adverse crisis impacts, the effects of COVID-19 have unequal effects on society, with young people and women having been disproportionately affected by job losses (World Bank 2021). Transport was one of the most affected sectors, recording a decline of over 5 percent in the labor market (see Figure 31 in the Annex), and many businesses in the sector encountered immense operational and financial difficulties (Transport Community 2021). With a strong post-COVID recovery in 2021, which happened at faster pace than previously projected, job markets recovered and the average employment rate in the region reached an historic high of 46 percent in June 2022. While growth in the WB6 proved to be relatively robust in 2022 and 2023, high inflation poses risks to poverty reduction and fiscal spending pressures following the energy and food price shocks that have offset revenue increases brought by high inflation (World Bank 2022a).

In the longer-term, the impacts of climate change and natural resource degradation are likely to exacerbate and complicate the economic challenges in WB6 countries, with disproportionate impacts on the poor. The WB6 have been identified as one of the planet's Warming Hot Spots, experiencing frequent heat waves and the mean average summer temperature climbing to 7.5°C above pre-industrial times (World Bank 2014). Given the increased risk of floods and drought periods, the WB6 countries must not lose sight of building long-term foundations for a resilient economy and transport sector. A higher risk for winter and spring floods, potentially causing tremendous damage to infrastructure, or the effect of decreasing rainfalls over the year on electricity production are only examples of the specific challenges for the WB6 countries.

Infrastructure investment in the region, while low overall, has been dominated by transport, energy and more recently information and communication technology (ICT). A lack of infrastructure

investment in sectors that help to protect the environment (e.g., water, sewerage, waste management, and in greenest investments in transport and energy), improve human health, support social activities, and boost education (especially of marginalized groups) is seriously hampering development, European integration, and is one of the reasons for mass emigration of large parts of the younger population. The nature of the legacy investment exacerbated a carbon-intensive economy with investments in roads and coal-fired power plants while not sufficiently supporting investments in the green transition, environmental services, and pollution control.

The transition to a market economy in the Western Balkans is still in process. Most of the main transport companies in the region are State Owned Enterprises (SOEs) who operate infrastructure services in a traditional way. There is little incentive for innovation and many of the companies are struggling with financial and operational sustainability which hinders their ability to attract private capital. The management of the SOEs is generally politically appointed. As such there is frequent turnover of senior staff, and people are appointed who do not necessarily have experience in the sector. Reform of these SOEs is a priority for the green agenda as they represent the main polluters, consume public subsidy, and stifle the private sector and innovation. For instance, improving the governance framework for SOEs (ownership policy, professional boards of directors, accountability mechanisms for their performance, and financial and fiscal discipline) is needed along with structural reforms to improve sector performance (e.g., rule-based tariff setting, public service obligations) and ability to mobilize finance. Sustainable development of the transport sector will need reforms of (SOE and market-orientated approaches for transport modes to develop customer bases including enhancing public-private investment opportunities.

The post war transport infrastructure in the Western Balkans has seen some challenges in meeting the demands of the modern era and the need to link with the major trading partners in Western Europe. Infrastructure demand is also being affected by the demographics in the region, which has an aging and declining population, with population decline being more accentuated in rural areas. The quality of infrastructure has been allowed to decline, and this is particularly evident in the rail and municipal roads network where a program of renewal is desperately needed. However, there has been heavy investment programs in the main transport corridors and the links between cities are starting to improve. A focus on expediting the implementation of key projects would support this effort and help to free up additional resources that lenders are reluctant to commit until existing projects are completed.

A recent report on Investment in the Western Balkans region (wiiw 2018) stressed that infrastructure investment in the region is too low overall. At the time of the financial crisis there was a peak in infrastructure of just under 2 percent of GDP, but this dropped to 1 percent following the crisis. This is being supplemented by two big infrastructure initiatives, the EU Western Balkans Investment Framework (WBIF) and China's Belt and Road Initiative, which have both invested about 8 billion[13] euros over the last decade. The WBIF also contributed 800 million euros in grants. The Belt and Road Initiative has invested exclusively in transport, energy, and ICT, and the WBIF have invested just over 10 percent of their funds in environmental infrastructure. The new Growth Plan for the Western Balkans (European Commission 2023a), adopted by the European Commission November 2023, has a total financial envelope of €6 billion for 2024-2027, consisting of €2 billion in grants and €4 billion in concessional loans.

[13] A billion is 1,000 million.

Going forward, business-as-usual approaches will not address the complex and simultaneous environmental, economic, political, and social challenges that confront the WB6 and its transport sector. The interdependence between climate change, economic systems, and demographics, means that targeting any one of these challenges in isolation is likely to be less effective than a coordinated response (World Bank Development Committee 2021).This requires a holistic approach that seeks new economic opportunities to decarbonize transportation infrastructure and services at the regional, national, and local levels, while improving resilience, social inclusion, and economic development (including the eradication of poverty and shared prosperity) (World Bank Group 2021).This transition requires strong national leadership at both the national and subnational levels to communicate to business groups and the general population the need for change in the sector. For the transport sector, this means decoupling economic growth from greenhouse gas (GHG) emissions and local air emissions, among other negative externalities. The associated increase in demand for transport also needs to be decoupled from its traditional externalities, including GHG emissions as well as local air pollution, traffic congestion, and social exclusion.

The window for investing in sustainable transport infrastructure and services in the WB6 is now. Transport systems in the WB6 are at a critical decision point for determining development trajectories and climate impacts. The transport networks and cities built today will set patterns of pollution, energy consumption, and population density for decades to come. Therefore, there is a need to consider the irreversible implications of policies and avoid getting "locked into" unsustainable development paths. In the transport sector, critical examples of this are the rapid increase in motorization and the loss of railway modal share in the region. Fortunately, there are investment options that can generate jobs and economic growth while ensuring a resilient and inclusive transition toward a green economy.

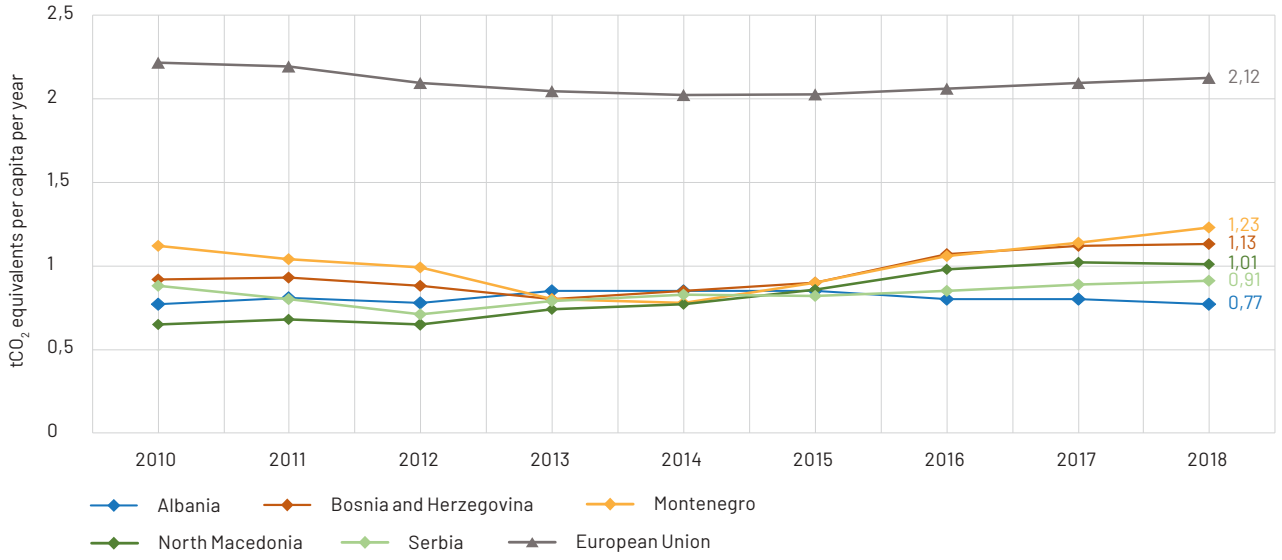
Transport Sector's Role in GRID

Green

Per capita GHG emissions from transport in the WB6 are lower than in most EU countries but are growing in all WB6 countries except Albania (Figure 1). Whereas the highest per capita GHG emissions from transport in the WB6 were reached by Montenegro, amounting to 1.23 tonnes CO_2 equivalents per person and year, EU27 per capita emissions were of 2.12 tonnes CO_2 equivalents per person and year. However, the emissions from the transport sector and its share of total GHG emissions are expected to further increase in line with increased demand for motorized travel (Eurostat 2021a). For example, road traffic volumes in Montenegro are estimated to grow by 45 percent between 2015 and 2025 and a further 25 percent by 2035 (Ministry of Sustainable Development and Tourism, UNDP in Montenegro 2020). Roads account for the vast majority of the transport sector's GHG emissions in the WB6 countries—95 percent in 2021[14]—necessitating actions at the national and local levels to address the energy efficiency of road-based vehicles and to find ways to shift traffic to greener modes.

[14] World Bank calculations based on data from the Organization for Economic Co-operation and Development (OECD) 2021 and the International Energy Agency (IEA) 2022.

Figure 1. Per capita GHG emissions from transport in selected WB6 countries and the EU



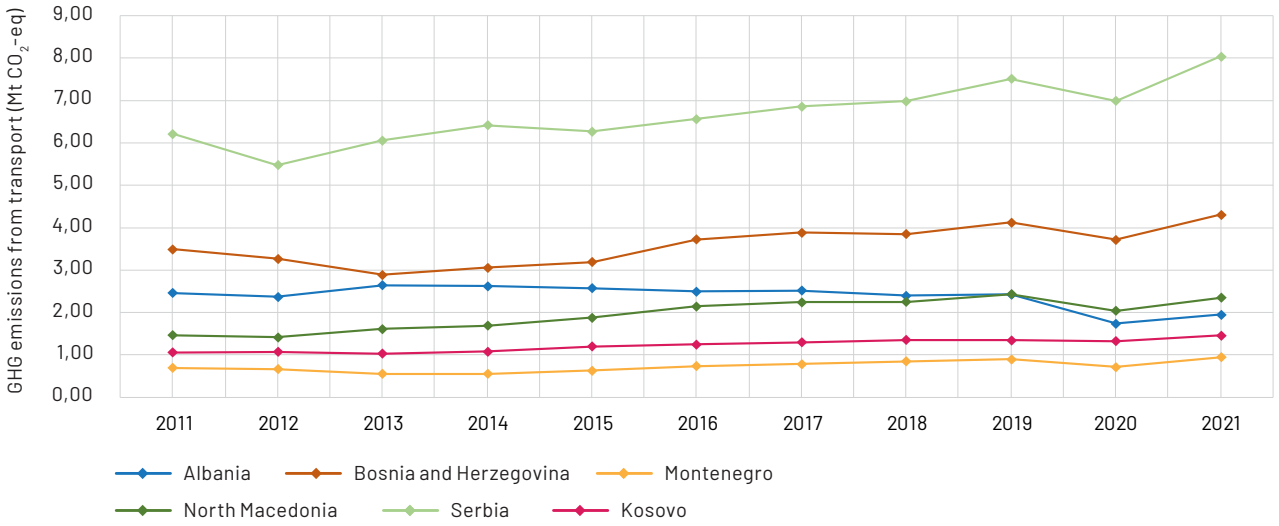
Source: Climate watch 2021.

It is increasingly evident that all countries must embrace decarbonization if the world is to meet the urgent objectives of the Paris Agreement, and this means specifying ambitious transport sector mitigation targets in Nationally Determined Contributions (NDCs). Globally, GHG emissions from transport have more than doubled since 1970, with the transport sector now being the second largest contributor and its emissions being estimated to increase at a faster rate than any other sector between now and 2050. Economic and demographic growth have more than offset the reductions in transport emissions intensity due to technological improvements (World Bank 2021c). While the climate agenda gained momentum with COP26 (November 2021) and even with more ambitious targets set for economy-wide emissions reductions in 13 of 54 second-generation NDCs, current pledges would still lead to warming of 2.6°C by 2100, far exceeding Paris Agreement targets. Regarding the first generation of NDCs (from 2015–2020), 76 percent highlighted the transport sector as a mitigation source, but only 8 percent included transport-specific GHG mitigation targets or specific interventions and policies (SLOCAT 2020) (GIZ 2017). By May 2023, although 83 percent of NDCs included transport measures, only 18 percent had set transport GHG emission targets (ITF 2023). As such, despite the importance of the transport sector to decarbonization efforts, current NDC instruments fail to properly recognize the importance of the sector and its contributions to the climate mitigation agenda. CO_2 emissions from transport are predicted to slightly decrease by only 3 percent by 2050 even if today's commitments to decarbonize transport are fully implemented, therefore predictably failing to deliver the Paris Agreement Goals (ITF 2023a).

Tackling climate change requires significant and urgent action in the transport sector. The sector is not on track to meet 2050 emission reduction targets. Under a business-as-usual pathway, global transport CO_2 emissions could increase from 8 gigatonnes (Gt) in 2019 to between 10 and 20 Gt in 2050 (SLOCAT 2021). Among WB6 countries, the transport sector averaged 15 percent of total GHG emissions in 2019 (see Figure 3) and these emissions are rising; therefore, taking immediate action toward low-carbon transport is required. All of WB6 countries, except for Albania, have a share of transport in the total CO_2 emissions that is still significantly lower than the EU average. However, the

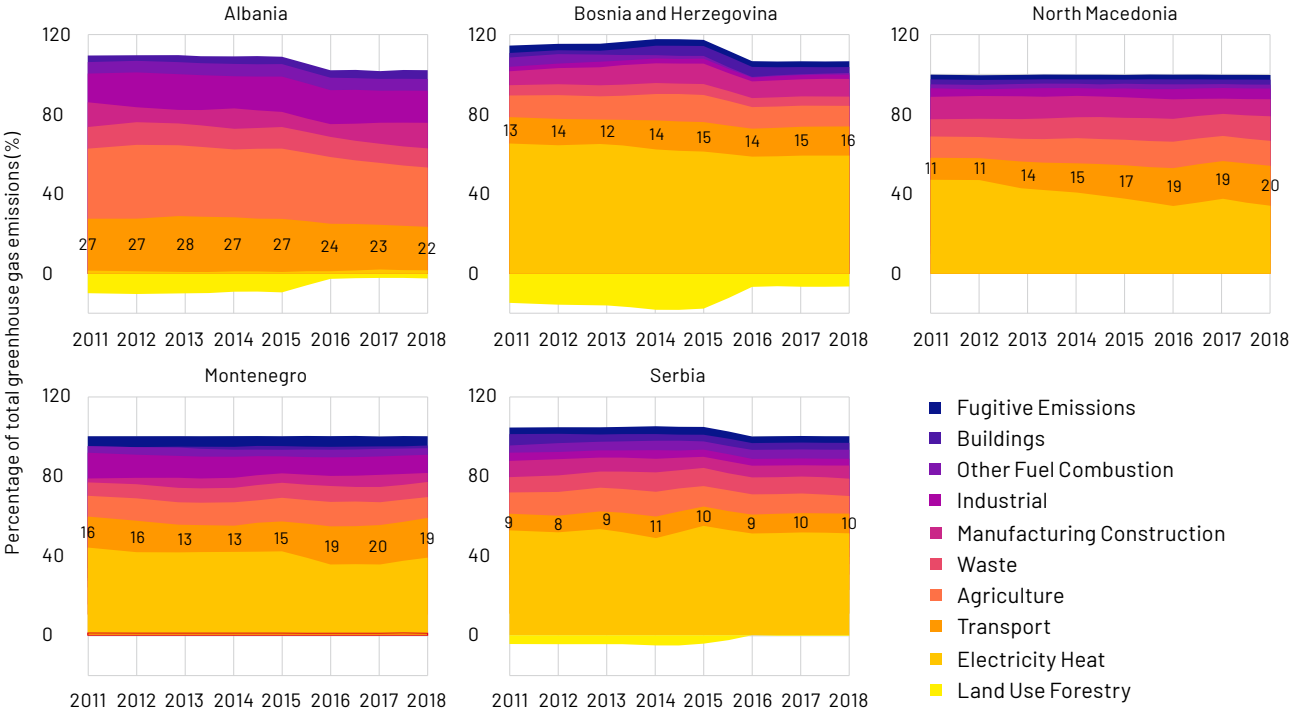
transport sector's GHG emissions have been increasing since 2011 in North Macedonia, Montenegro, and Serbia (see Figure 2) (Banja, Đukanović and Belis 2020). This contrasts with other sectors with a major contribution to the economy, which are managing to reduce or stabilize the CO_2 emission output (Figure 3). Maintaining low-emission levels from transport must be envisaged as a major goal, despite the challenge of increasing demand for transport.

Figure 2. GHG emissions from transport (Mt CO_2-eq) (2011–2021)



Source: International Energy Agency (IEA) 2022.

Figure 3. Percent of total GHG emissions contributed by transport and other economic sectors



Source: Climate Watch 2021a.

Greening transport will not only help reduce GHG emissions but can also improve air quality. The WB6 is home to some of the most polluted cities in Europe and the world.[15] Concentrations of air pollutants, particularly particulate matter, usually exceed permitted values set by the World Health Organization (WHO)[16] and the more lenient limits set out by the EU and adopted by the WB6. In the region, air pollution is the biggest environmental cause of premature deaths, contributing to between 4 to 19 percent of total premature mortality in Western Balkan cities, reducing life expectancy by between 0.4 and 1.3 years (Daul, Kryzanowski and Kujundzic 2019) and resulting in significant welfare loss (World Bank and Institute for Health metrics and Evaluation 2016). Transport is a major contributing sector to local pollutant emissions, including $PM_{2.5}$, PM_{10}, NO_x, and SO_x, among others. Whereas particulate matter emission in other sectors has had generally decreasing trends over the last decade throughout the WB6 region, emissions from the transport sector are increasing in urban areas (JRC 2021). Traffic is acknowledged to be the dominant source of local pollutant emissions during heating off-season (usually April to October), having a substantial impact on pollution levels throughout the year (World Bank 2020b). Recent studies conducted in Bosnia and Herzegovina, North Macedonia and Kosovo, however, highlight the shortages of transport emission inventories in the countries, which makes accurately tracking sector-specific emissions challenging (World Bank 2019b) and presents the need to conduct improved studies to better assess sectoral contributions. In addition, studies are often conducted at the national level and do not necessarily represent the specificities of the air quality challenges in the urban areas.

Resilient

To safeguard economic and social development, WB6 countries need to prepare for, mitigate, and adapt to a wide range of risks and uncertainties, including recessions, financial shocks, conflict and violence, natural hazards, climate change, and pandemics. Resilience of the transport sector ensures the uninterrupted performance and reliability of transport infrastructure and services in their support of green trade and transport jobs, even as the region is increasingly under threat from climate change-induced natural hazards and other shocks. By building resilience, countries can avoid diverting scarce resources to the costly, repeated cycles of disaster, restructuring, recovery, and rebuilding. Additional economic risks arise from locking into carbon-intensive activities for which there is declining demand.

The WB6 is one of the regions in Europe most heavily affected by the impact of climate change, which increases the risk of extreme weather events that provoke riverine floods, landslides, or wildfires. Therefore, strengthening climate proofing, resilience, and prevention and preparedness in the region's transport systems at regional, national, and city level must be considered a critical component of GRID. Existing climate models predict that the WB6 (along with much of Europe) will experience significant temperature increases of 1.7°C to 4°C in average, significant decreases in annual precipitation, and increased seasonal flood risk along key rivers (IPCC 2021) (World Bank 2014).

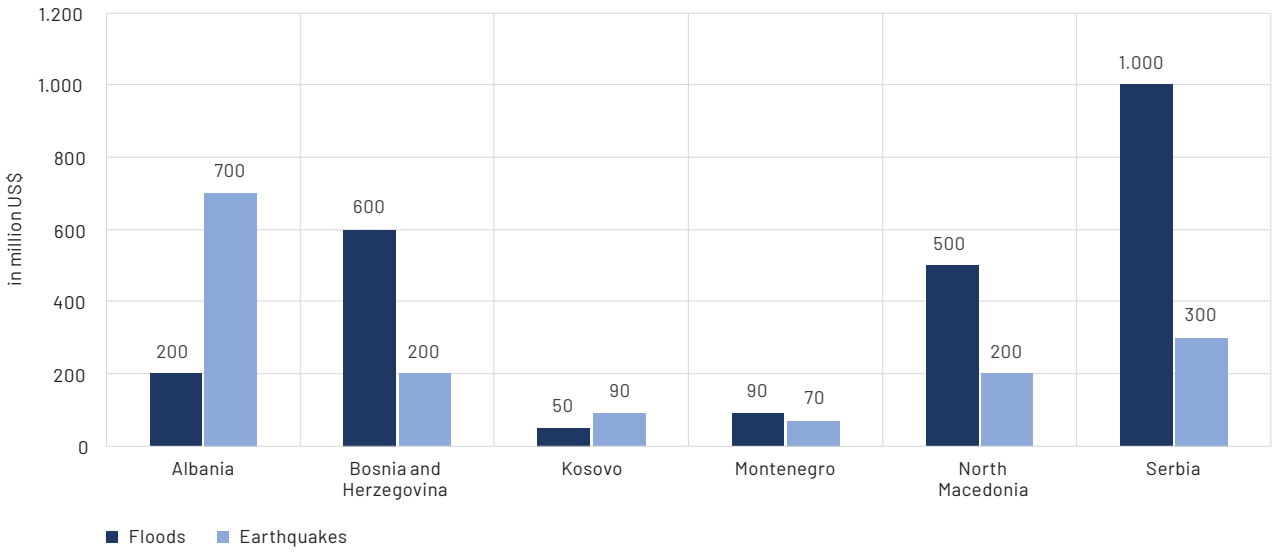
Many roads, bridges, rail infrastructure, and other critical transport facilities face increasing exposure to climate change-related extreme weather events, including (flash) floods, landslides, and wildfires (World Bank 2018). While there is no comprehensive impacts assessment of climate change-related extreme weather events and earthquakes on transport infrastructure in the region,

[15] Sarajevo was ranked 7th, Skopje 17th, and Belgrade 24th of the world's most polluted cities, ranked by annual average $PM_{2.5}$ concentration (bne IntelliNews 2021).

[16] This is the case for both the newly updated in 2021 and the prior guidelines.

examples from WB6 countries illustrate the potential economic losses. In Serbia alone, about 12,000 km of road infrastructure and 900 km of railways are directly exposed to potential flood risk (World Bank 2021a). The 2014 floods caused damages and losses equaling to 4.[7] percent of the GDP in Serbia (European Commission 2014). In Bosnia and Herzegovina, the estimated cost for all damages in the transportation and communications sector after the 2014 floods accounted for a total of 261.76 million euros according to the Recovery Needs Assessment conducted with support of the World Bank Group (World Bank 2020a). According to World Bank estimates from 2015, the annual average number of people affected by floods in the WB6 is 440,000 and the equivalent for earthquakes is 379,000 (GFDRR 2015). These disasters also come at a significant economic cost, with losses amounting to 10 percent to 14 percent of GDP in 2015 in some countries (see Figure 4). River flooding is expected to increase in the WB6, particularly along the Danube, Sava, and Tisza rivers (World Bank 2014). Box 1 provides in-depth examples of natural hazards in Albania and Serbia.

Figure 4. Estimated annual average (2015) economic losses due to floods and earthquakes



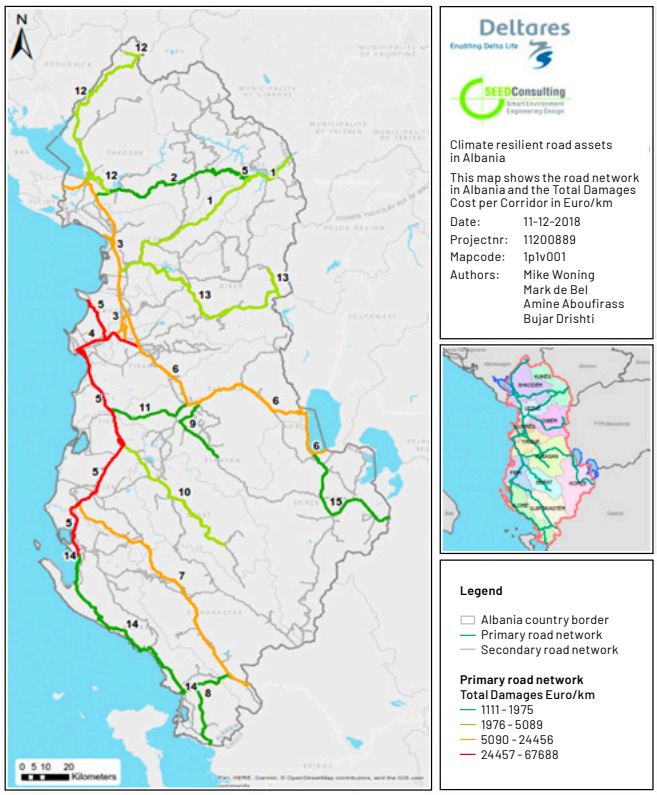
Source: Global Facility for Disaster Reduction and Recovery 2015.

WB6 climate transport network resilience can be improved through two key measures: better consideration of hazard vulnerability and climate risk in road and rail asset management and ensuring implementation of high construction standards at a local level. Whereas most WB6 countries have defined strong standards for construction of new infrastructure regarding seismological risk, the risk of floods and flash floods is not sufficiently acknowledged, especially for the local road network. Low construction standards on the local level were reflected in the disruptions after the 2014 floods in Serbia and Bosnia and Herzegovina. Seventy percent of affected road assets were on the local level, partly impeding the accessibility of basic infrastructure and services in the aftermath of the disaster. To the current day, road and rail asset management does not adequately take into consideration resilience and risk preparedness. On the local level, a lack of human and financial resources as well as a lack of simplified implementation guidelines are the prevalent reasons for insufficient action.

Box 1. Road infrastructure vulnerability to flooding in Albania and Serbia

In Albania, floods frequently affect the north and southeast of the country, and climate change is expected to result in more intense and frequent rainfall events, exacerbating flood risk. Damage from the 2002 floods exceeded US$23 million, while the 2010 floods on the Drin River resulted in at least US$30 million in damages. Urban flooding has and will continue to increase as urban storm water systems fail to cope with more intense rainfall; Shkodër is at particularly high risk of combined river and urban flooding. Floods pose a significant risk to the transportation and trade network. It is estimated that average annual losses from floods along the two most critical road corridors (Tirana to Durrës and Durrës to Vlore) are as high as US$15 million. Bridges and culverts along the primary road network are estimated to suffer over US$20 million in annual flood losses. Other critical infrastructure is also at risk. Figure 5 highlights these vulnerable road corridors and the likely costs of road closure should one of these corridors be affected.

Figure 5. Estimated total damages cost per corridor in Euro/km for Albania



Source: Xiong, Jing., and Espinet Alegre, Xavier 2019.

Serbia is also prone to natural hazards with significant potential impacts on people and infrastructure, with much of the burden falling on local government. Local roads and streets are essential in times of natural disasters to ensure access to and evacuation from affected areas. Frequent floods affect an estimated population of 200,000 annually at an estimated cost of US$1 billion. The extraordinary floods in May 2014 pushed around 125,000 people into poverty with an estimated cost of 2.7 percent of GDP. It is estimated that 15 percent of the overall damage was on the transport network, out of which 70 percent at the local-level infrastructure. A post-disaster assessment reported more than 2,000 landslides along state roads and more than 3,000 along local roads. Reducing this type of network vulnerability through slope protection works, improved drainage, and river-bank protection is essential to minimize future losses and protect the scarce budget of local authorities. In general, there is a lack of data to monitor the vulnerability of local infrastructure to climate change and natural hazards and there are still no adequate financial incentives for climate change adaptation and mitigation activities at the local level. Serbia has taken initial steps in establishing an effective institutional framework for climate response, but there is limited capacity, financing, and awareness about climate change adaptation.

Inclusive

Rising inequality and the exclusion of different social groups from services, markets, and opportunities impedes development and foments discord. Ensuring that recovery and economic growth do not leave anyone behind can reduce disparities in opportunities and outcomes and help excluded groups realize a fair share of benefits. The COVID-19 crisis had a significant impact on the regions' development and even led to negative GDP growth in 2020. WB6 governments launched support measures to cushion the effect on employment and incomes. Aids like social assistance benefits, extended unemployment insurance, wage subsidies, and social security contributions for private firms were able to partly alleviate the pandemic's impact but did not manage to reach all affected. In 2022, rapidly rising inflation and in particular the energy and food price shocks as consequence of the invasion of Ukraine, posed a significant risk to poverty reduction going forward. Inflation is particularly affecting the vulnerable segments of the population.

In the transport sector, achieving inclusive access means connecting all people and communities to economic and social opportunities, accounting for the needs of different groups. People-centered transportation systems allow all individuals—including the poor, those in vulnerable situations, women, children, the elderly, and persons with disabilities—to live independently and contribute to the economy and society. The provision of safe, affordable, accessible, and sustainable transport systems for all is codified in the UN Sustainable Development Goals as SDG 11.2 (SLOCAT n.d). The lack of access to transport services has disproportionately negative impacts on specific groups like women and girls. However, improvements in the collection and management of data that allow for analysis of travel and access by different sociodemographic groups and geographic regions are urgently needed.

Ensuring good accessibility of job opportunities and key services in both rural and urban areas is of primary importance for achieving social inclusion and equal opportunities. During the socialist period most of the cities in the WB6 region had limited access to car use, provided extensive and often multimodal public transport systems and cycling and walking were popular choices. In the last decades however, a rapid modal shift to private passenger cars and sprawling sub-urbanization have created access challenges. Years of insufficient investment in public transport and active mobility, not only due to the automobile domination, but also due to lack of adequate governance structures, funding mechanisms, and political will, have led to a situation in which accessibility of economic opportunities and services is often challenging (Pojani, Boussauw, Pojani 2017).

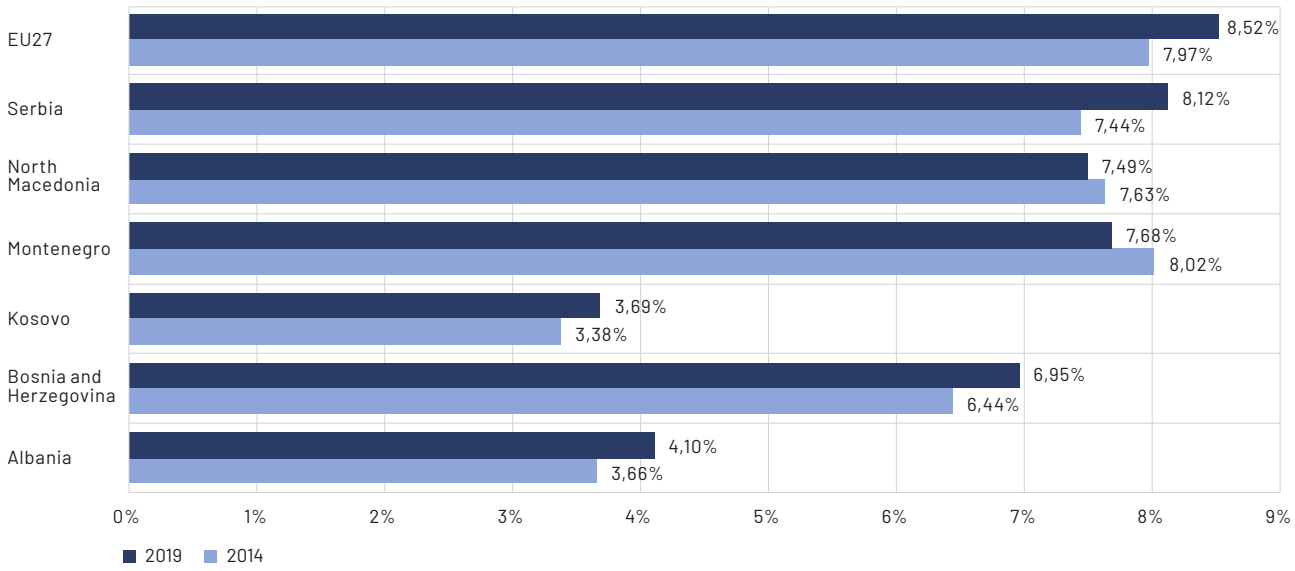
Furthermore, road safety issues in WB6 countries reduce quality of access and remain a critical factor for sustainable development, causing significant welfare and economic losses. The importance of road safety is codified in the UN Sustainable Development Goals as SDG 3.6, which provided the ambitious target of halving road deaths and injuries from road traffic accidents from 2010 to 2020. With this critical agenda advancing as the "First Decade of Action" WB6 countries achieved significant reductions in road deaths. However, road death rates in all six countries in 2019 remain above the EU27's rate of 55 fatalities per million inhabitants (see Table 11 in the Annex). And these road safety issues come at a substantial cost to economic development. For example, in Albania, Bosnia and Herzegovina, and Serbia, the economic burden of road injuries amounts to nearly 0.1 percent of total GDP each year (respectively estimated at 274, 378, and 832 million constant 2010 US$) (Chen, Kuhn, Prettner and Bloom 2019).

Economic Development

The transport sector is not only a critical part of climate action and an important enabler of inclusive development in the WB6, but also a major driver of economic growth and tied strongly to trade with the EU. In many WB6 countries, the export of goods and services makes up more than 40 percent of GDP (World Bank 2017).This share remains low by global standards, particularly in the region's landlocked countries, suggesting that more efficient and resilient freight transportation networks could help better integrate WB6 countries into world trade and support economic growth (World Bank 2018a). For the WB6, the EU is the leading trade partner, accounting for almost 70 percent of the region's total trade (European Commission 2021b).Thus, the improvement of inland transport networks will be critical in facilitating trade. Simultaneously, EU carbon pricing (European Commission 2021a) is likely to drive improved efficiency in logistics.

The transport sector not only supports economic activity through trade, but it also employs a significant portion of the WB6 workforce. In 2019, more than 520 thousand people in the WB6 countries were employed in the transport sector, accounting for a total of 7 percent of the formal workforce (ILO 2020). The share of workforce employed in transport (as well as storage and communication)[17] has risen in all WB6 countries by an average of 0.5 percent between 2014 and 2019 (see Figure 6), except for North Macedonia and Montenegro which show a slight decline. Serbia's transport sector has the highest share with 8.12 percent of the total workforce. EU's transport sector employs 8.5 percent of the total workforce. Additionally, informal employment and service provision in the transport sector is likely to play a relevant role in the WB6 economies. Thus, official employment numbers likely underestimate the number of people working in transport-related activities.

Figure 6. Share of workforce in transport, storage, and communication in the EU and WB6



Source: World Bank calculations based on data from ILO 2020 and Kosovo Agency of Statistics 2019.

[17] The transport sector is combined with storage and communication by the International Labor Organization.

Women are underrepresented in employment in the transport sector, both in the WB6, where they represent 23.2 percent of workforce, and the EU, where 25 percent of workforce in the transport sector is female (ILO 2020). Special attention should be paid to ensuring equal opportunities for men and women to ensure inclusive growth. Improving diversity in the transport workforce can expand representation of underserved users in transport sector leadership, leading to infrastructure networks and services that better meet the needs of all and supporting inclusive access.

The transition to a less carbon-intensive, more resilient and inclusive transport system will spur economic benefits for the WB6 countries. Aligning with the Transport Community's "Sustainable and Smart Mobility Strategy (Transport Community 2021)" that mirrors the European agenda for the transport sector, will offer important opportunities for the WB6 economies through closer integration in the European market and the availability of EU resources to help fund the green transition of the transport sector.

Pillars for Strategic Action in the Transport Sector to Achieve GRID

Clearly, the transport sector has a critical role to play in supporting GRID for the WB6. Emissions from the transport sector have historically increased with economic growth, which comes with increased demand for travel and motorization. To foster a transport sector that is compatible with GRID, key elements from the green economy and sustainable mobility agendas need to be considered in light of the local context of WB6 countries and cities. This approach can create near-term strategic actions that can support greater resilience and inclusivity while decoupling future growth from GHG emissions.

Figure 7. Conceptual framework for a WB6 agenda for GRID for Transport

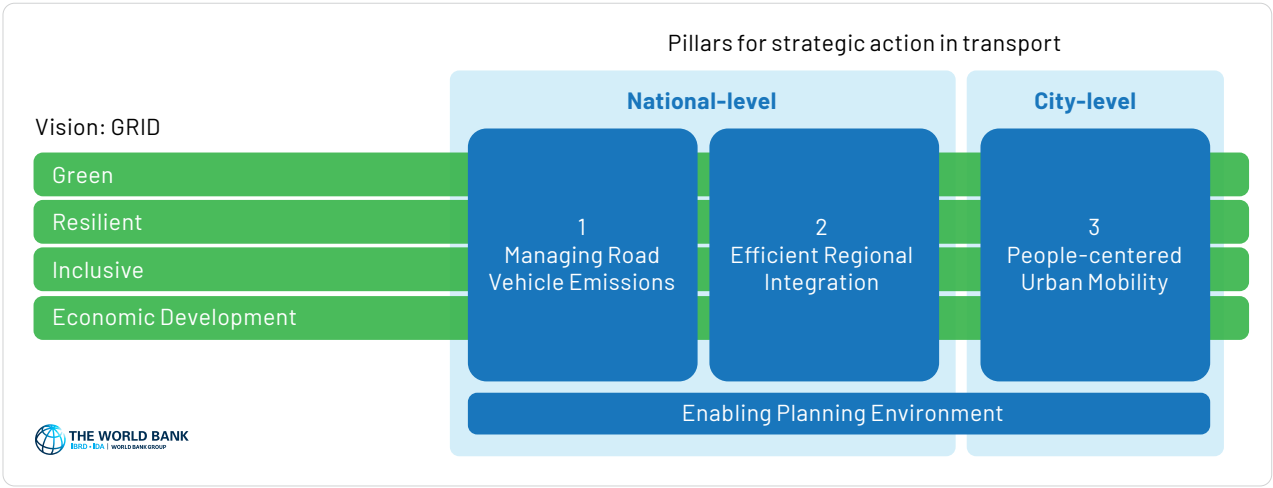


Figure 7 presents a frame-work for critical, near-term strategic actions, or pillars, in the transport sector that can contribute to GRID for the WB6, building on the WB6's Sustainable and Smart Mobility Strategy.[18] The first pillar is focused on national-level policies around transport fuels and vehicles that would require broad support across national ministries. The second pillar discusses

[18] The conceptual framework for a WB6 agenda for green growth for transport and its GRID vision is based on the sustainable mobility policy paradigm of Avoid-Shift-Improve. To ensure the development of a comprehensive set of strategies and actions all three pillars require the need to avoid or reduce the need to travel; to shift toward more environmentally friendly modes such as walking, cycling, public transport, shared mobility, and rail/waterways; as well as to improve fuel and vehicle efficiency and electrification based on renewable energy.

infrastructure and service investment priorities for WB6 Ministries of Transport; it covers the importance of modernizing, greening, and making more resilient intercity passenger and freight transport networks in the region, which will support connectivity, regional integration, and economic growth. Pillar three highlights the important role of the region's cities in climate action and economic growth. These three pillars need to be underpinned by an enabling planning environment. This builds a strong case for national support of local governments in responding to the inefficiencies and environmental externalities of existing urban mobility systems. Second, GRID framework for transport highlights the critical role that the transport sector plays in regional integration, competitiveness and trade, and economic development.

Based on transport sector data in WB6 countries, this Report defines three pillars for strategic action toward GRID for transport: 1) managing road vehicle emissions; 2) efficient regional integration; and 3) people-centered urban mobility. Each of the three pillars have been identified as areas where national or local governments in WB6 countries can advance all components of GRID: green, resilient, and inclusive economic development. Each pillar contains context-specific, evidence-based policy recommendations for the WB6 transport sector. Because many strategic actions may have important co-benefits for other pillars, adopting a balanced approach that leverages these synergies is the best way to realize economic, social, and environmental gains.

a. **Pillar I Managing road vehicle emissions addresses the environmental and social impacts of road-based mobility in terms of GHG emissions and road safety**, aligning the transport sector with goals for climate change mitigation. Strategic actions under this pillar include improving regulatory requirements on vehicle emissions—particularly for imported secondhand vehicles—and motorization management policies that monitor vehicles from registration through in-use inspection to end-of-life scrappage or recycling. These regulations can be reinforced by updated vehicle and fuel taxation policies. At the same time, implement improved governance, regulatory and incentive mechanisms on e-mobility, including an enabling environment for private investment in charging infrastructure. These strategic actions can help manage and mitigate motorization in the WB6, addressing the carbon-intensive and unaffordable trajectory that motorization is bearing in the region.

b. **Pillar 2 Efficient regional integration tackles the issue of intermodal connectivity in the WB6,** building on the targeted European TEN-T infrastructure network for road, rail, inland waterways, and air. It discusses the critical role of the transport sector in providing people access to opportunities and transporting goods to markets among WB6 countries and with the EU. It also covers the need to improve the efficiency and resilience of the region's transport networks to facilitate trade. Finally, investments and management tools are needed to encourage a shift away from the road-based modes toward more sustainable transport modes by making rail and inland waterway more efficient and convenient option for passengers and freight. This Pillar underscores the relevance of complementing infrastructure investment programs with a range of institutional reforms and capacity building to pursue a transport system that is not only environmentally and socially sustainable, but also financially.

c. **Pillar 3 People-centered Urban Mobility addresses the critical role of urban areas in the economic development and climate impact of the WB6 region** and the importance of efficient, green, inclusive, and healthy mobility systems to support economic activity. This pillar tackles the

application of sustainable mobility (SuM4All 2021) to the urban context, in particular contributing to improvements in air quality and avoiding car-dependent urban and transport development. This Pillar also highlights the critical role of unleashing the synergies between the public and the private sector to facilitate the deployment of sustainable transport solutions.

Box 2. The role of the private sector in the Green Growth Agenda for transport

Private sector engagement as a key element for the transport contribution to the Green Growth Agenda the WB6

To achieve a successful transition towards a green growth in the transport sector in the WB6, the private sector, from manufacturing, transport service providers to the private banks, needs to be a key partner. Currently the economy in the Western Balkans is still in transition towards a market economy. The sector is still dominated by the public sector with limited involvement of private companies and capital. To accelerate this engagement there is a need for sector reforms of the current state-owned enterprises and development of market-oriented approaches for transport enhancing public-private investment. At the same time, combined efforts from the public and private sectors need to be complemented with targeted pricing and subsidy mechanisms to shift away from carbon intensive transport options, e.g. reform on fuel taxation. This report highlights three major opportunities for the future: reform of state-own enterprises in the rail sector; acceleration of investment in e-mobility; and public transport reform.

Expansion of the use of railways, for both freight and passengers, is a key modal sustainable pillar. Moving goods and people to rail requires reforms to enable private investment in state-owned companies. At the same time, private capital mobilization for investment in infrastructure is key for greening the transport infrastructure.

Accelerating e-mobility requires a larger private sector involvement. This starts with public-private investments in charging infrastructure for private vehicles, as well as exploring opportunities for common procurement of electric buses to motivate the market to invest in cleaner vehicles. This should be complemented with streamlining the enabling environment rules and administrative procedures for obtaining installation licenses for charging infrastructure, reducing the barriers for investment.

Public transport suffered from substantial losses during COVID-19. Better conditions for the public transport operators, reforming the contractual models, setting clear rules for remuneration and risk allocation, as well as identifying options to subsidize public transport when needed, would allow the private sector to increase their engagement and to improve the quality of the services provided.

The World Bank can play a key role in supporting private sector engagement. The Bank's transport practice is collaborating with the International Finance Cooperation (IFC) for exploring options to channel private capital into urban transport solutions. The Multilateral Investment Guarantee Agency (MIGA) is one of the vehicles that can be used to secure more private finance alongside identify new generations of lending for the future of transport in the Western Balkans.

Having the right institutions, enabling environment and ensuring financial sustainability of the transport sector is critical for the success of any strategic action toward green growth for transport. When it comes to the institutional environment, capacity-building is a critical activity for both national and city governments in the WB6. Policymakers and practitioners need to understand and implement innovative financing solutions, to make the transition to less carbon intensive, more resilient and more inclusive transport systems feasible. The shift of investment away from carbon intensive transport to more sustainable options is only feasible with the public and private sector's combined efforts (See Box 2). In addition, providing the digital infrastructure and technology policies needed to support innovation and protocols for data collection, analysis, and regular benchmarking of performance of transport infrastructure and assets will be critical for all strategic actions in the transport sector in support of GRID.

With this conceptual framework with the three pillars and enabling environment in mind, the following chapters discuss the institutional and enabling environment needed for the transport sector to support the vision for GRID, and then discuss each of the three pillars in detail, providing the specific rationale, strategic actions, and contributions to GRID.

Creating an Enabling Planning Environment

> Explicit mitigation targets and strengthening national and local transport plans — supported by better data collection, stronger institutions, and regional collaboration — are essential for WB6 countries to transition toward a green, resilient, and inclusive economic development (GRID).

GRID for transport begins with a clear long-term vision and coordination of plans at multiple levels of government, from local to international. Setting explicit targets for decarbonization, resilience, and inclusive economic development in the transport sector will help align efforts and send clear priorities for public and private investment in the sector. Processes for project prioritization and planning can be updated to better account for greenhouse gas (GHG) emissions, vulnerabilities to climate change, and distributional impacts across different users and geographic regions. In WB6 countries, collaboration across national and city governments can help build the capacity in data collection, analysis, and benchmarking of performance of transport infrastructure and assets needed to identify priority areas for action and investment. This chapter outlines these key strategic actions for regional, national, and local governments in the WB6 and demonstrates how they can support more sustainable transport by creating an enabling planning environment.

Set explicit mitigation targets for the transport sector in country NDCs and operationalize these targets in national climate change and transport strategies / action plans

All WB6 countries can start by improving the contributions of the transport sector in their Nationally Determined Contributions (NDCs), raising ambitions, and providing more specific targets and policy actions for the sector. The NDCs[19] define economy wide CO_2 reduction targets; however, transport-related goals and measures must be tackled more precisely. Among the WB6, all but Kosovo[20] have submitted their updated NDCs in 2021and 2022. Of these NDCs, only the revised submission for Bosnia and Herzegovina addresses transport separately from the energy sector, and only North Macedonia ties into a separate transport sector strategy (Table 1). NDCs in the WB6 need to consider the transport sector separately from the energy sector. Doing so would require setting specific targets for transport sector GHG emissions mitigations. Supporting documents at the national level—such as Climate Change Action Plans and Long-Term Strategies (LTSs)—should provide details on the measures that can be implemented to meet these targets and budget to ensure the achievement of these goals. A balanced approach to consider freight and passenger transport activities is crucial to move toward a net zero carbon trajectory in the long term.

[19] NDCs lay the foundation for climate-compatible measures.

[20] Kosovo is not a signatory to the UN Framework Convention on Climate Change and therefore does not have a nationally determined contribution under the 2015 Paris Agreement.

Table 1. The transport sector in WB6 countries' Nationally Determined Contributions as of mid-2023

	ALB	BIH	XKX	MNE	MKD	SRB
NDC availability	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**Yes**
Latest version	2nd 2021	2nd 2021	/	2nd 2021	2nd 2021	2nd 2022
Transport sector covered	No, but mentioned.	Yes. 65% reduction of GHG in 2050 compared to 1990	/	Yes, within Energy	Yes, within Energy	No, not explicitly
GHG target compared to 1990 (economy-wide)	20.9% reduction by 2030	33.2% - 36.8% reduction 2030	/	35% reduction by 2030	51% reduction by 2030	33.3% reduction by 2030
Mitigation strategies	Decoupling emissions and economic growth	Low-emission economy, GHG emission reduction projects	/	Decoupling emissions from economic growth	Mitigation as main focus of INDC[21] policies and measures	Separate Climate Change Strategy incl. an action plan
Resilience and adaption	Recognizes the vulnerability due to climate change e.g., in the electricity system	Separate chapter on adaption in NDC and separate strategy	/	Recognizes the vulnerability due to climate change, incl. risks to transport infrastructure	Adaption component is not included	Recognizes risks from climate change, but transport not included in adaption and resilience chapter
Related documents	National Energy and Climate Plan 2021-2030	Climate Change Adaptation and Low-Emission Development Strategy 2020–2030, further strategic frameworks	Climate Change Strategy 2019–2028 Action Plan on Climate Change 2019–2021	National Climate Change Strategy Energy Development Strategy	Law and Strategy on Climate Change, Strategy for Regional Development 2019–2029, in sector: Transport Sector Strategy	Climate Strategy & Action plan

Source: German Agency for International Cooperation (GIZ) 2021 and Republic of Serbia 2022.

Some climate change strategies already provide goals and measures on sustainability in transport. All NDCs refer to related strategies on climate change and some even refer to sector-specific strategies.[22] The main documents mentioned provide details on priorities such as legislations, harmonization of frameworks, and measures on infrastructure, services, and vehicles. Their main emphasis is the reduction of emissions, air pollution, and energy use in transport and most of them

[21] Intended Nationally Determined Contribution.

[22] ALB: National Energy and Climate Plan 2021-2030; XKX: Climate Change Strategy 2019–2028 and Action Plan on Climate Change 2019–2021; BIH: Climate Change Adaptation and Low-Emission Development Strategy 2020–2030; MNE: SEA of Montenegro's National Climate Change Strategy (NCCS) 2015; MKD: National Energy and Climate Plan of the Republic of North Macedonia (draft); SRB: Climate Strategy & Action Plan Republic of Serbia 2019.

set targets in this regard.[23] Freight transport is mentioned but will require further attention as a fast-growing subsector. Montenegro and Albania have developed a National Energy and Climate Plan (NECP) (Energy Community 2021), while the other WB6 countries have developed national Climate Strategies.

All WB6 countries have adopted transport strategies at the national level, but some need to be updated. For instance, Serbia's national strategy has expired in 2018 and, albeit being in preparation, no new strategy has been released.[24] The existing strategies should be strengthened and better aligned with other economic and climate goals for the country and the region, sharing objectives and actions to facilitate prioritization and implementation. Effective solutions for the most urgent problems of the region will need a multi-sector approach, considering not only transport itself, but also energy provision and other fields of action. Furthermore, national transport strategies should take a multimodal network perspective, covering all areas of passenger and freight movement and considering all types of interventions from built environment changes to new policies and technologies.

Climate action in the transport sector must be considered in the context of how the sector supports economic activity and other UN Sustainable Development Goal (SDG) strategies. Strategic actions should be accompanied by regular reviews of the progress made on national and sub-national level. Embracing the Voluntary National Review (VNR) process, encouraged in the 2030 Agenda for Sustainable Development, as an opportunity for strategic planning (rather than just reporting) could help to further inform national transport strategies and facilitate the sharing of experiences. Most WB6 countries have already submitted VNR reports and committed themselves to the further implementation of the 2030 Agenda for Sustainable Development.

Strengthening opportunities for private investment should enhance the green growth trajectory for the WB6 countries. The region has been lagging transitioning from a planned economy to a market economy. Creating a more enabling environment for public-private partnerships and private capital mobilization in railway and road development and management, as well as for public transport operations, will help accelerate the rollout of green infrastructure and improve the efficiency of service provision.

Create a National Urban Mobility Policy to support city governments in the planning and implemen-tation of sustainable mobility. Couple with improved municipal finance capabilities

To support sustainable mobility action at the city level, WB6 countries should articulate the role of the national government in strengthening the enabling environment (planning, financing, regulatory framework) for cities. This can be done through enhancing action on national policy making for cities and creating a fiscal architecture that enables cities to have adequate funding for developing and sustaining urban transport infrastructure and services. For example, through the World Bank/AFD-financed Serbia Local Infrastructure and Institutional Development Project, the national government in Serbia has created a national program that is supporting local institutional and technical capacity to deliver key municipal infrastructure and services for all 145 local self-government units in the country.

[23] Examples of targets (not all mentioned): SRB: Limit GHG emissions growth in the transport sector by 10 percent by 2030 and reduce emissions by 30–54 percent by 2050; MNE: 20 percent increase in mixed fuel, electric, hydrogen, high efficiency fossil fuels, or alternative fueled vehicles in operation, 15 percent increase in energy efficiency measures or the enhancement of processes, conversion to less-polluting energy sources, or the modernization of equipment; BIH: Reduce transport emissions by 10 percent in relation to business-as-usual scenario by 2025; MKD: 19 percent savings of final energy consumption in the transport sector relative to business-as-usual (BAU).

[24] The World Bank is supporting Serbia in the development of the new strategy through the Western Balkans Trade and Transport Facilitation Project.

The strengthening of existing legislation and/or the creation of new National Urban Mobility Policies would also assist in setting finance policy for the planning and implementation of sustainable mobility. One option to consider is to require that all cities above a certain size complete a Sustainable Urban Mobility Plan (SUMP), which prioritizes critical transport investment. Overall, the reform is not to create further administrative burden, but to strengthen the cities in their efforts to deliver on their path towards more livable cities.

Creating a virtuous municipal finance-accessibility-property tax cycle. A significant strength of WB6 municipalities relative to some parts of the world is that they have the legal and budgetary authority to respond to their citizens' urban mobility concerns. Directly elected mayors with statutory authority provides one important leg of accountability. Creditworthy municipal financial bases, driven at least to some degree by own-revenue (such as property taxes), provide the other. Strengthening the financial resource base of municipalities, and strengthening the link between good urban mobility outcomes and the financial resource base can create a virtuous market driven cycle where improvements in the city's financial base allow for investments in accessibility and investments in accessibility in turn produce stronger financial outcomes for the municipality. Practically this could include (i) a focus on improving the creditworthiness and financial base of municipalities by improving the cadaster and property tax related process; (ii) putting in place a SUMP, associated institutions (such as a public transport authority) and creating investments in public and active transport that ensure that municipal resources are targeted towards enhancing urban mobility outcomes.

Enhancing national policies supporting cities should ensure citizen engagement and participative planning processes. This will provide a critical opportunity for regional and local authorities to direct their policies and investments toward citizens' needs. Civil society in the WB6 is becoming increasingly interested in mobility, and this is accompanied by a willingness of several groups to participate in progress toward a greener and more human-centered transport sector. Efficient cooperation between civil society and planning authorities can lead to more inclusive transport systems that meet the needs of all users, including vulnerable groups.

Strengthen planning for emissions mitigation at the city level: SUMPs, GCAPs, and Air Quality Action Plans

While a few major cities in the WB6 have SUMPs, the region should aim to extend this planning to many more cities over time. SUMPs have been approved in major cities in all WB6 countries within the last five years: Tirana, Pristina, Skopje, Podgorica, Belgrade, Sarajevo, Banja Luka, and Novi Sad. Several cities have also introduced Green City Action Plans (GCAPs) supported by the European Bank for Reconstruction and Development (EBRD) (EBRD 2021). Yet, the practice has yet to be implemented in smaller cities. Furthermore, even when SUMPs exist, their programs are only modestly implemented and do not currently include resilience. Cities are advancing selected initiatives, but these efforts still fall short of achieving the sustainable path for green and resilient mobility envisioned. The transition from planning to implementation and the provision of resources is now a challenge that those cities must tackle ambitiously. Western Balkan cities often have limited financial and technical capacity to initiatives laid out in the SUMPs.

In cities with severe air quality challenges, governments may consider Air Quality Action Plans that, with a multisectoral perspective, do explicitly account for significant and growing emissions from the transport sector. These plans, which could be part of the SUMPs or of city development plans,

should align with existing and emerging ambient air quality directives from the EU, including not only the collection and reporting of data, but also the assessment of strategic actions that can help improve air quality to EU and World Health Organization (WHO) standards (European Commission 2018).In the WB6, only Skopje has developed an air quality improvement plan (Ministry of Environment and Physical Planning of North Macedonia and Finnish Meteorological Institute 2016) while Belgrade has one in preparation (Belgrade Open School 2021).

Implement a lifecycle approach to climate adaptation and geohazard risk management to comprehensively assess risk, identify network vulnerabilities, and improve maintenance practices

Resilience is a crucial factor in ensuring a long-term sustainable transport network, but it is lacking attention in national strategies. WB6 countries committed to developing climate resilient plans for their transport networks in the Sofia Declaration (Regional Cooperation Council 2020) and list resilience as a key goal in their Sustainable and Smart Mobility Strategy; however, planning for resilience at all levels of government is still lacking. This is despite NDCs recognizing vulnerability of sectors due to climate change (Table 1) and some countries proposing separate strategies and in-depth analysis on the matter (mostly yet to be undertaken). WB6 countries should complement plans for decarbonization of their economies with plans for adaptation or resilience. Serbia has announced a network resilience study to ensure a long-term sustainable transport network (World Bank 2018b). At regional level, the Transport Community is advancing a vulnerability analysis and criticality assessment of the rail and road TEN-T Network in the Western Balkans area.

Transport authorities in the region will have to take a more comprehensive approach to assessing risks and identifying network vulnerabilities. For existing assets, national governments should complete criticality and vulnerability assessments of major networks—particularly road and rail—and prioritize capital improvement programs. Given the region's particular vulnerability to flooding, special attention should be paid to culverts and bridges along major economic corridors and trade arteries (Xiong and Espinet Alegre 2019). Resilience assessments should follow a data-driven process that distinguishes between two main groups of actions: i) risk impact assessments, and ii) identification and prioritization of engineering solutions for risk reduction. If network risks can be identified in advance, good engineering can substantially reduce the impacts. In some cases, new national design standards need to be developed to respond to heightened climate risks but in the short term, good adherence to existing standards and engineering good practice will have a major positive impact.

New projects should adhere to the latest standards and materials for design and construction. The construction of new transport infrastructure should be approached according to best practices. While these are often codified in law—for example, the Law of Planning and Construction for the Republic of Serbia—the standards are often not properly applied due to time or resource constraints during the planning process (World Bank 2018). At the very least, engineering geological investigations and mapping and inclusion of natural hazard risk assessments should be mandatory steps in the planning process.

The increasing impact of extreme climate events will also have an impact on the routine operations and maintenance of transport networks. Routine maintenance and inspections and collection of data on asset conditions as well as hazard monitoring are critical measures to improve resilience and support the free movement of people and goods. When it comes to maintenance to protect against climate events, priorities will include cleaning and repairing drainage systems, maintaining slope and bridge

protection works, and coordinating with other authorities such as those responsible for upstream river management. Climate change will bring the requirement for more regular maintenance cycles and, since the WB6 region already has issues with regards to investing in regular maintenance of the network, improving these practices is an area of both high priority and high cost-benefit returns. Implementing a life-cycle approach to climate adaptation and geohazard risk management will require a vision for transport infrastructure and service resilience as part of National Adaptation Plans that is aligned with green growth.

Finally, strong crisis preparedness and response is the last defense against economic and social shocks. Crisis preparedness and response relies significantly on institutional coordination, asset management, and other aspects of the transport sector's enabling environment. At all levels, early warning systems and protocols for rapid response following incidents are critical. Furthermore, at the city level, transport agencies play a critical role in working with emergency responders.

Adopt protocols for data collection, analysis, and regular benchmarking of performance of transport infrastructure and services for all users

Adopting protocols for data collection, analysis, and regular benchmarking of performance will enable monitoring, diagnostics, and improvement of transport infrastructure and services to meet the needs of different user groups. At the national and regional level, governmental statistical offices can work across ministries within and outside WB6 countries to strengthen and build data partnerships with the European Environment Agency (EEA, which publishes an annual Transport and Environment Report), Eurostat, and other organizations. The adoption of international data standards and systems can help reduce the capacity burden of these efforts and provide critical information for decision making. Creating guidance for the collection and reporting of data will allow benchmarking across comparable indicators (e.g., on infrastructure or transport network resilience, transport sector employment urban accessibility, etc.) in a "European Common Mobility Data Space (Transport Community 2021)." Data collection must cover all modes of travel, consider different travel patterns, and provide granularity for analysis of specific user groups and regions. The Transport Community can have a leading role in coordinating all these types of activities as they work directly with all WB6 countries. At the city level, information on informal activities in transport need to be addressed within data collection. Cities can also benefit from data partnerships and take part in ongoing Europe-wide efforts such as the European Metropolitan Transport Authorities (EMTA) in addition to creating in-country or regional data observatories.

Prepare for the digitalization of infrastructure

Providing the digital infrastructure and technology policies needed to support innovation will be critical for GRID for transport (European Commission 2021c). 5G technology can enable faster communication between operator and user, vehicles, and smart urban infrastructure. This will create a fertile ground for the creation of new technological platforms for both freight and passenger movement and may create digital alternatives to travel (e.g., teleactivities). The WB6's Transport Community already recognizes "smart mobility" as a critical component of their sustainable mobility strategy, covering initiatives such as multimodal passenger ticketing systems, traffic management, or rail automation (Transport Community 2021). Therefore, WB6 countries should prioritize digital readiness as an important foundation for green growth in transport (and other sectors).

The WB6 countries are working on strategies for deployment of intelligent transport systems (ITS) on their road network. This action is declared as one of the major interests for the region. For example, Albania adopted a "Strategy for Application of Intelligent Systems in the Road Transport" in 2020 (Ministry of Infrastructure and Energy of the Republic of Albania 2020) and the preparation of national ITS strategies for Bosnia and Herzegovina (all modes), Kosovo (all modes), Albania (railway and maritime) and Montenegro (railway) was announced to be supported by the CONNECTA facility (CONNECTA 2022).

Continue to foster regional collaboration among countries and cities and encourage policy learning

The WB6 can establish common treaties to ensure faster implementation of sustainable, connected transport systems. This can be done by making use of the Transport Community Treaty (Transport Community 2017) (established in 2017). The Transport Community Treaty (TCT) is signed by WB6 countries and the 27 EU member states as partners and aims to integrate the WB6's transport market into the EU. The TCT built on the results of the SEETO cooperation and established extension of the TEN-T Network to the Western Balkans.

Continuing to foster regional collaboration among WB6 national governments will be critical for achieving GRID for transport. As a region, the WB6 already has a strong foundation of cooperation among national Ministries of Transport through the Transport Community (European Commission n.d) (EEAS 2021) (European Commission 2017) and there are ample avenues for cooperation with the EU (European Commission n.d) (European Commission 2018a). Specific areas for regional alignment and collaboration include common policies for secondhand vehicle imports; fuel and vehicle taxation; coordination of regional trade corridors, particularly railways and roads based that are part of the TEN-T; and standardization of electric vehicle (EV) charging.

WB6 countries should cooperate to set regional frameworks and partnerships that harmonize vehicle and fuel standards. The harmonization of policy instruments associated with motorization and fuel and vehicle excises would also provide important value to the green growth agenda and to the convergence with the EU policy framework. Though policy action on higher standards and import restrictions are challenging for policy makers, a regional approach might help to communicate those changes to key stakeholders, development partners including the EU, businesses and the entire population. WB6 countries need to work together as the challenges cannot be resolved if action is taken individually. Vehicle markets in each country are not large enough to substantially influence international flows of vehicles. WB6 countries share commonalities is terms of vehicle fleet situation, regulations, and practices; thus working together as a regional trading bloc, adopting the same vehicle and fuel standards, and aligning taxation schemes can help leverage greater bargaining power. The costs of not acting will be higher for all WB6 with their economies further lagging behind the green transition in the rest of Europe.

The WB6 should investigate advancing measures beyond its jurisdiction, such as the management of exportation of secondhand vehicles from the EU. So far, weak regulations in most WB6 countries allow imports of old and highly polluting vehicles that contribute to the pressing air pollution issues in the region (see chapter PILLAR 1. MANAGING ROAD VEHICLE EMISSIONS). Addressing the motorization issue in one given country is like to move the problem (dirty secondhand vehicles) to neighboring countries. Joint action could build on existing efforts to consolidate the region's Stabilization and Association Agreements with the EU (European Commission 2021d).

Sharing of policy knowledge and best practices across cities can help expand opportunities for exploration and mitigate limited capacities. Many cities in the WB6 face similar challenges regarding air pollution, congestion, and deteriorating access. Therefore, they can learn from one another by joining networks of city governments that support common capacity-building programs, provide fora for policy-learning from pilot projects, and discuss common approaches to regulation and procurement. Major cities in almost all WB6 countries are already members of CIVITAS, a network of cities dedicated to cleaner and more sustainable mobility.[25] Other cities in WB6 can benefit from joining CIVITAS, POLIS, and other similar networks. Table 2 shows prioritized actions that should be implemented to enhance an enabling planning environment, as well as their contribution to GRID. The actions have been derived from the prior discussed aspects of the current institutional and planning environment.

Table 2. Strategic actions to improve institutions and enabling environment around the transport sector to achieve GRID

Action	Jurisdiction	G	R	I	D
Set explicit mitigation targets for the transport sector in country NDCs and operationalize these targets in national climate change and transport strategies/action plans	National	••			
Create a National Urban Mobility Policy	National	•	•	•	•
Strengthen planning for emissions mitigation at the city level: SUMPs, GCAPs, and Air Quality Action Plans	City	••	•	•	•
Implement a lifecycle approach to climate adaptation and geohazard risk management to comprehensively assess risk, identify network vulnerabilities, and improve maintenance practices	National (and city for maintenance)		••		••
Adopt protocols for data collection, analysis, and regular benchmarking of performance of transport infrastructure and services for all users	Regional, national, and city	•	•	••	•
Prepare for the digitalization of infrastructure	National and city			•	•
Continue to foster regional collaboration among countries through the Transport Community	Regional	•	•	•	•
Encourage policy learning across cities	City	•	•	•	•

Note: Regional jurisdiction refers to actions that are best implemented as a collaboration among all WB6 countries.
• moderate contribution; •• strong contribution to dimension of GRID.

[25] At the start of 2021, CIVINET Slovenia-Croatia-SEE had 171 members, including 44 from Slovenia, 72 from Croatia, and 55 from WB6 countries (Bosnia and Herzegovina, North Macedonia, Montenegro, and Serbia). Cities make up 66 of those members (European Commission 2021c).

Pillar 1.
Managing Road Vehicle Emissions

WB6 countries are undertaking carbon-intensive and unaffordable trajectories in the transport sector. Paving the way for e-mobility while strengthening vehicle standards for new and secondhand vehicles, reforming vehicle and fuel taxation, and improving emission inspection practices are key actions for WB6 national governments to tackle increasing motorization, reduce energy consumption, and curb the emission footprint of the transport sector.

The first pillar of strategic action for the transport sector, managing road vehicle emissions, addresses the economic, environmental, and social impacts of road-based mobility in terms of energy consumption, local pollutants and greenhouse gas (GHG) emissions. This pillar relies on the setting of clear goals, strategies, and processes that align the sector with climate change mitigation and sustainable development agendas (as discussed in CREATING AN ENABLING PLANNING ENVIRONMENT). This chapter will begin with a deep dive into data on transport GHG emissions, motorization rates, and fleet compositions in WB6 countries, providing the rationale for this pillar. Next, it will outline key strategic actions that national governments can take in the near and medium term to better manage and mitigate the negative environmental impacts of continued motorization. Finally, the chapter will conclude with a summary of the recommended actions and how they contribute to each dimension of GRID: green, resilient, and inclusive economic development. A more detailed analysis of policy actions pertaining to Pillar 1 is presented in the World Bank report Policies to Improve the Environmental Performance of Road Vehicles in the Western Balkans (World Bank 2024). While increased motorization also affects air quality and livability of cities, this topic will be discussed in detail in Pillar 3 on PEOPLE-CENTERED URBAN MOBILITY.

Rationale

The transport sector reliance on fossil fuel consumption contributes to the WB6 trade balance deficit. The WB6 region is highly dependent on imports of oil and oil products, with only Albania and Serbia having their own production of oil (but even in these countries, consumption is higher than domestic production). The transport sector is, by far, the largest consumer of oil and oil products in the region, accounting for around 70 percent in the WB6 (IEA 2022a). Increasing energy efficiency (i.e., reducing the amount of energy used per unit transported, passenger-km or tonne-km) and transitioning to alternative fuels, is therefore critical not only as an environmental imperative but also for energy security and economic development.

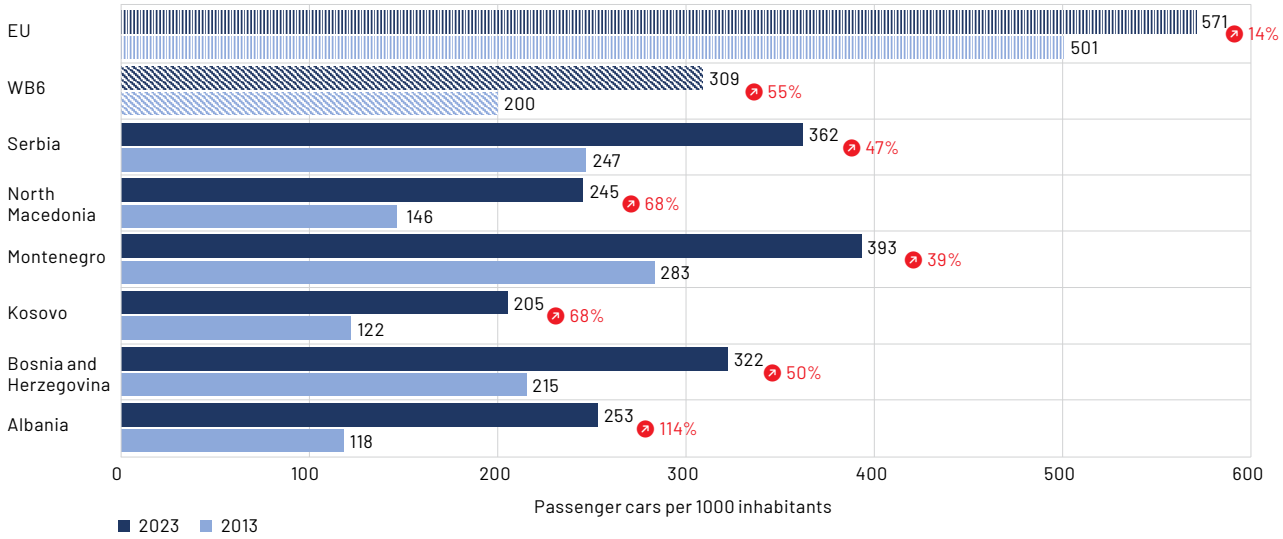
Managing the road subsector is critical, because it accounts for 95 percent[26] of transport GHG emissions in the WB6 countries, exceeding the EU's equivalent 73 percent (European Environment

[26] World Bank calculations based on data from the Organization for Economic Co-operation and Development (OECD) and the International Energy Agency (IEA).

Agency 2024) share of road transport in total transport GHG emissions. Even if a sizable modal shift occurs to greener modes such as rail, navigation, and non-motorized transport, the road sector will continue to be the greatest contributor to the transport sector's footprint. Rail and inland waterways' emissions have little contribution to GHG emissions, due to the low share in passenger and freight transport volume and significantly lower-carbon intensity.[27] Thus, there is a need to tackle the carbon intensity of the road sector, while pursuing modal shift of current and future traffic to greener modes (see Pillar 2). Moreover, decarbonizing the transport sector is expected to bring valuable co-benefits, such as the improvement of air quality and a stronger focus on people-centered mobility and public space design (see Pillar 3).

Increases in CO_2 emissions are unequivocally associated with increasing motorization rates in the WB6 countries. Motorization rates have augmented at a fast pace in the last decade achieving an average motorization rate of 309 passenger cars per 1,000 inhabitants, although this is still below EU average of 571 passenger cars per 1,000 inhabitants (2023).[28] All countries are rapidly motorizing, with exacerbated examples such as Albania with 114 percent increase in the motorization rate between 2013 and 2023 (see Figure 8). As of 2023, Montenegro had the highest motorization rate with 393 passenger cars per 1,000 inhabitants, whereas Kosovo presented the lowest, reporting 205 vehicles per 1,000 inhabitants. These numbers refer to passenger cars only, which account for most of all registered vehicles in the WB6.[29] The share of transport in the final energy consumption has significantly grown with increasing motorization and higher transport volumes. In 2019, the transport sector consumed 39.9 percent of total energy consumption in Albania and 38.4 percent in North Macedonia (see Figure 32 in the annex) (IEA 2019).

Figure 8. Motorization rate in the EU and WB6 countries 2013–2023



Source: Eurostat 2023; Agency for Statistics of Bosnia and Herzegovina 2024.

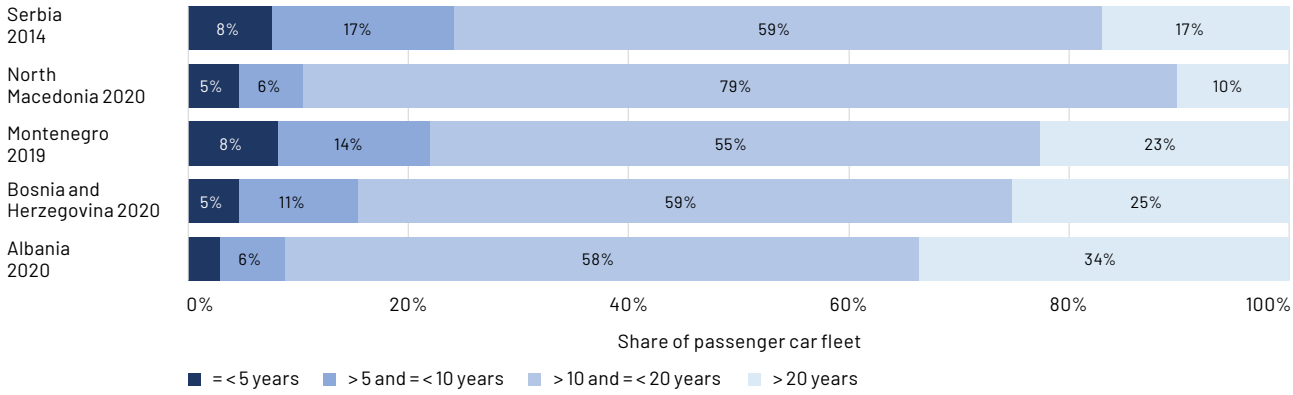
[27] Note that emissions from electrified rail are primarily attributed to the electricity generation rather than transport sector in GHG accounting.

[28] World Bank calculations based on Eurostat 2023 and the Agency for Statistics of Bosnia and Herzegovina 2024.

[29] In North Macedonia, more than 85 percent of all registered vehicles were cars in 2018 and in Serbia 83.3 percent were cars in 2020. On the other hand, motorcycles are rapidly increasing above other vehicle types (for example, increasing by 32 percent in North Macedonia and by 42.8 percent in Serbia between 2015 and 2020). Also, the increase in number of trailers and semi-trailers has been considerable during this time, amounting to a 126 percent growth.

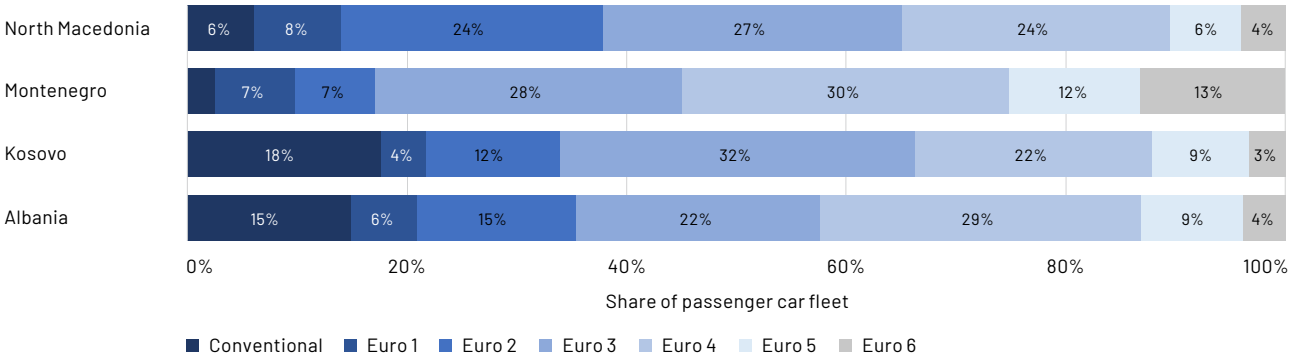
Demand for road mobility is currently being met with old, highly polluting vehicle fleets. For example, when it comes to the age of existing fleets, in Montenegro, Bosnia and Herzegovina, and Serbia around 80 percent of vehicles are older than 10 years, and in Albania and North Macedonia this share amounts to around 90 percent (see Figure 9). Because these vehicles are old, they also tend to meet lower environmental standards. For example, between 45 percent and 65 percent of vehicles registered in Albania, Montenegro, Kosovo, and North Macedonia are still of Euro 3 standard or lower[30] (see Figure 10). More than 70 percent of all registered passenger cars in Albania, Montenegro, Kosovo, and Bosnia and Herzegovina were diesel-fueled (see Figure 11). In North Macedonia (2019), the average diesel-fueled passenger car was of Euro 3 emission standard and aged more than 15 years. Petrol cars on the other hand, were 18 years old and only fulfilled Euro 2 standards on average (UNDP 2019). Despite more modern and cleaner vehicles having a higher average annual mileage, vehicles with low-emission standards (below Euro 3) are still circulating, with an average annual mileage between 10,000 km to 15,000 km (World Bank 2019c). Thus, the fleet is still highly pollutant and policy actions to green it are germane for the improvement of the environmental performance of the sector.

Figure 9. Proportion of passenger car fleet by age bracket



Source: World Bank 2024a.

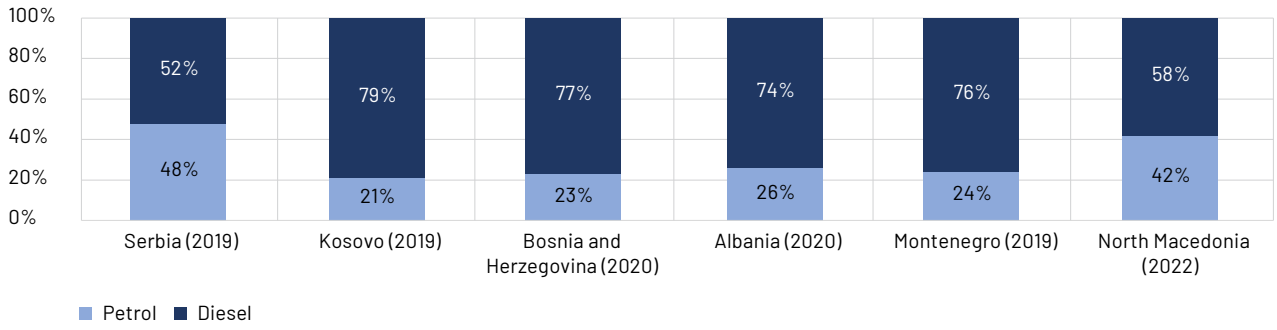
Figure 10. Proportion of passenger car fleet by Euro Standard



Source: World Bank 2024a.

[30] The EU introduced the 'Euro' emission standards, starting with 'Euro 1', in 2000. Subsequently, successively stricter standards ('Euro 2' to 'Euro 6') have been introduced. When compared to Euro 5 standards, vehicles classified as Euro 3 emit significantly higher amounts of CO, NO_x, and PM per km driven.

Figure 11. Registered passenger cars by fuel type



Source: World Bank 2024a.

WB6 countries still rank among the main importing countries for secondhand vehicles from the EU, despite the sizable carbon footprint of most secondhand vehicles. For example, Bosnia and Herzegovina and Serbia were among the top 5 importers worldwide of secondhand light-duty vehicles from the EU for the last years (2015–2018) (UNEP 2020). In 2018, Serbia imported 260,000 used vehicles and Bosnia and Herzegovina imported more than 130,000 used vehicles (which far outnumbered the 80,000 new vehicles registered in the country in the same year). In both cases the EU was the biggest exporter of secondhand vehicles (UNEP 2020). Overall, more than 80 percent of vehicle imports across the WB6 are secondhand vehicles, with some variations observed between countries (e.g., secondhand vehicles account for more than 90 percent of imports in Albania) (World Bank 2024a).

In addition to passenger cars, heavy-duty vehicles (trucks) and intercity buses (coaches) contribute disproportionately to road transport emissions. Globally heavy-duty vehicles are responsible for 25 percent of road-based emissions even though they only represent 1 percent of the fleet (Hamidi and Meroño 2021). In WB6 countries, the vast majority of freight is transported by road, with the truck fleet—as many as 240,000 trucks in Serbia (Statistical Office of the Republic of Serbia 2020)—also made up of old, highly polluting vehicles, with relevant implications in local pollution as well. In Kosovo, only 6 percent of heavy-duty vehicles fulfill Euro 5 or Euro 6 standards (Ministry of Economy and Environment of the Republic of Kosovo 2020), whereas in North Macedonia 23 percent of all heavy-duty vehicles reach those standards (UNDP 2019). Overall, more than 50 percent of Heavy-Duty Trucks in the Western Balkans fleet are still Euro 3 or lower (World Bank 2024a). Older models can emit high levels of particulates, nitrogen oxides, and other pollutants (ICCT 2021). National and international coaches are often outdated and perform poorly in terms of emissions and safety (UNDP 2019) (Ministry of Economy and Environment of the Republic of Kosovo 2020).

Rising fuel consumption and GHG emissions from the transport sector, coupled with high local pollution in the WB6, justifies moving away from the current carbon-intensive and highly polluting vehicle fleet. The WB6 region suffers from weak enabling policy and regulatory frameworks to manage motorization and existing vehicle fleets. WB6 countries can see large gains by improving vehicle and fuel standards—particularly for imported secondhand vehicles—and motorization management policies that monitor vehicles from registration through in-use inspection to end-of-life scrappage or recycling. These regulations can be reinforced through updated vehicle and fuel taxation policies. Simultaneously, the costs of measures must be anticipated to avoid a negative social impact, for example by making transport less affordable for groups of the population. Together, these strategic actions can help manage and mitigate motorization in the WB6, addressing the carbon-intensive and unaffordable trajectory that

motorization is bearing in the region. This shall be done considering the financial implications over the sector, as well as the opportunities for fiscal revenue generation.

Strategic Actions

Table 3 summarizes prioritized[31] key policy tools available to WB6 governments to address the challenges related to the road vehicle fleet to date and seize opportunities related to e-mobility. The table differentiates between (a) vehicle and fuel tax reforms, (b) regulatory requirements, and (c) policies to accelerate e-mobility. A more detailed analysis of these policy actions, including associated enabling policies, are presented in the World Bank report Policies to Improve the Environmental Performance of Road Vehicles in the Western Balkans (World Bank 2024).

Table 3. Key Policy Options to Foster an Inclusive and Environmentally Sound Transformation for Road Transport in the WB6

Policy Areas	New registrations		Existing vehicle stock
	New vehicles	Secondhand imports	
A. Vehicle and fuel taxation reforms			
Differentiated vehicle taxation based on environmental performance	Through both registration and circulation[32] taxes[33]		Through circulation taxes only
Increase fuel taxation	Impacting usage profiles of all vehicles, with stronger price signals for vehicles with poorer energy efficiency and higher levels of direct CO_2 emissions/km[34]		
B. Regulatory requirements			
Energy efficiency/CO_2 emission and pollutant emission regulations	Suitable for both new vehicles and secondhand imports, with vehicle importers as regulated entities		-
Roadworthiness and technical inspections	Included in vehicle type approval process and related technical regulations	Leveraging vehicle type approval regulations and requiring additional roadworthiness checks	Through requirements on periodical technical inspections
C. Policies to accelerate e-mobility rollout			
Early transition for highly utilized vehicles	Through regulatory requirements, incentives and/or fees specifically targeting vehicles with these usage profiles (e.g., taxis, ride sharing, mail delivery vehicles, buses), based on environmental performance		Via retrofitting programs, possibly supported by incentive programs[35]
Policy framework for EV charging infrastructure	Through regulatory requirements, incentives, and infrastructure-related investment plans by public authorities, and also leveraging first the case of highly utilized vehicles		-

[31] Taking stock of international best practice, previous experience in the region and neighboring countries, as well as extensive consultation with multiple stakeholders in the region via workshops and interviews, a set of more than 30 potential policy interventions was considered for the development of the World Bank report *Policies to Improve the Environmental Performance of Road Vehicles in the Western Balkans* (World Bank 2024). Through a multicriteria screening process considering environmental, economic, and equity impacts, as well as implementation barriers/viability, the shortlist of policy actions presented here was defined.

[32] Circulation or ownership taxes are recurrent (annual) taxes or charges to be paid by vehicle owners.

[33] Circulation or ownership taxes are more likely to require equity-related redistribution measures, especially for low-income households and small businesses lacking access to alternatives modes of transport than cars or trucks.

[34] Fuel taxes may also require equity-related redistribution measures, especially for capital-constrained households and small businesses that are more likely to rely on older and less energy efficient vehicles, and especially in cases where their access to alternatives modes of transport than cars or trucks is limited.

[35] Most relevant for capital-constrained households and small businesses, especially in cases with limited access to alternatives.

Reform vehicle and fuel taxation

Vehicle and fuel taxation presents significant potential to steer the market toward less energy- and carbon-intensive vehicle technologies. While most countries in the WB6 have some form of circulation or road tax, not all have implemented vehicle registration taxes or have optimized environmental taxation (see Table 4). Exploring new opportunities for fuel and environmental taxation can not only help mitigate transport sector emissions in these countries but may also provide an important additional revenue source for national governments. However, distributional impacts and equity implications should be properly accounted for when reforming vehicle and fuel taxation schemes.

Table 4. Overview on fuel and vehicle taxes in WB6 countries and the EU (as of October 2021)

		ALB	BIH	KXX	MNE	MKD	SRB	EU avg
Fuel taxes	**Excise tax, motor petrol (€/l)**		0.460	0.385	0.549	0.353	0.488	0.560
	Excise tax, diesel (€/l)		0.355	0.360	0.440	0.246	0.502	0.450
Circulation /road tax		0.22€/l	Yes: (Republic of Srpska)		Yes: 2.5–11.7€ (yearly fee per car depending on type & size)	Yes: fixed annual fee for road fund	Yes	Yes: all countries
Environmental /carbon tax		Yes: 0.01€/l for petrol and 0.02€/l for diesel		Yes: (annual, 10€ for cars, 30€ for >3.5t)		Yes: (for secondhand vehicle import, depending on volume of cylinder)		
Other tax		Yes: Luxury Tax for vehicles (annual)	Excessive weight charge (per km)					
Registration tax		Yes: for registered and unregistered vehicles		Yes	Yes	Yes (yearly, depending on engine power)		Yes: all countries
Motor vehicle tax (annual tax for owning a vehicle)		Yes: based on cylinder size, age, and fuel type	Yes: based on basic fee and size	Yes: based on vehicle age and engine size	Yes	Yes (on first registration, based on both value and CO_2 emissions of the vehicle)		

Sources: World Bank elaboration based on UNDP 2020; GlobalPetrolPrices.com 2022; [Albania]: Energy Community 2021a; ITF 2021; [Bosnia and Herzegovina] ITF 2021a; [Kosovo]: World Bank 2021d; [Montenegro]: Montenegro Ministry of Interior 2021; [North Macedonia]: World Bank 2020c; UNDP 2017; [EU avg]: European Commission 2019a.

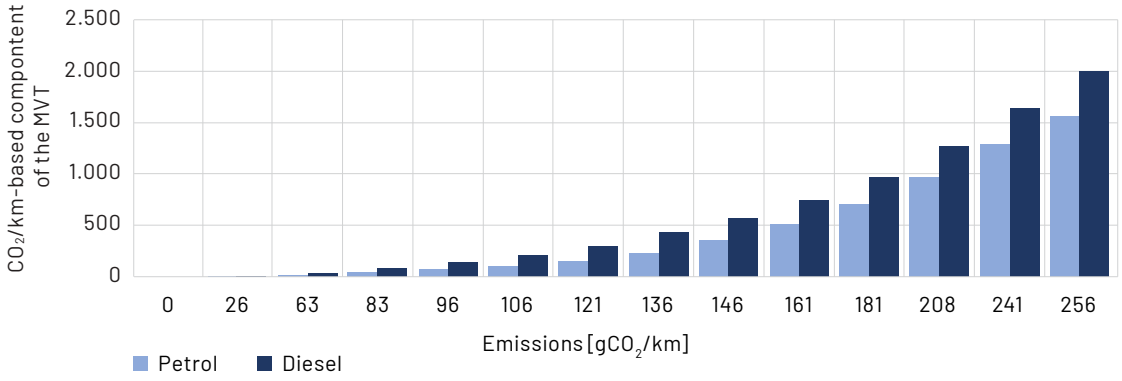
The nature and differentiation parameters on vehicle taxation vary largely among WB6 countries, but with environmental performance not yet playing a key role. Taxation is based on flat rates irrespective of environmental performance in Albania (with a differentiation for luxury vehicles), Bosnia and Herzegovina, and Montenegro. No taxation is applied in Kosovo and Serbia (World Bank 2024).In 2020, North Macedonia was the first country in the WB6 to introduce a tax to promote improved fuel economy and lower carbon dioxide (CO_2) emissions for passenger cars, including secondhand imports

(as detailed in Box 3). The use of this approach for passenger cars in North Macedonia is the best practice currently applied in the region and can serve as a blueprint for other countries in the region to use fiscal reforms to improve environmental performance of passenger cars and light commercial vehicles.

Box 3. Vehicle Registration Tax Linked to Levels of CO_2 Emissions in North Macedonia

A motor vehicle tax is applied in North Macedonia the first time a vehicle is registered in the country, both for new and secondhand vehicle imports. In 2020, this tax was reformed to promote fuel economy for passenger cars with the adoption of the Motor Vehicle Tax Law. The reform introduced a specific tax component to account for the vehicle's CO_2 emissions (g CO_2/km) with increasing rates per unit of emission for more pollutant vehicles (Figure 12), in addition to a tax component dependent on the vehicle value. The reform also included a full exemption from the motor vehicle tax for battery electric vehicles.

Figure 12. Tax Amount for CO_2 of Petrol and Diesel Vehicles in North Macedonia (EUR)



The reform of passenger car taxation was intended to at least maintain the level of revenue from vehicle tax while addressing equity aspects, enabling citizens who have little purchasing power to buy vehicles with better environmental and higher energy efficiency standards. It led to significant decreases of market share for energy inefficient vehicles and increased purchases of more environmentally friendly vehicles. Average CO_2 emissions per km of cars (including new and secondhand) were reduced by 21 percent in 2022, compared to prereform levels. The reform also generated net increases in tax revenues: more than a doubling in 2022 vs. 2019. Despite initial opposition by car importers, acceptability levels significantly increased once the tax reform was implemented.

Source: World Bank 2024

Price signals from fuel taxes (including excise duties, value-added taxes (VAT), and carbon pricing mechanisms) are likely to have even greater impact on environmental performance and tax revenues than vehicle taxation reforms. Fuel taxes not only impact the purchase of new vehicles, but they also reduce the activity levels of the existing fleet (average annual mileage). For the same reason, the

increase in fiscal revenues from increasing fuel taxes can be significant in the short- and medium-term, and expected to decline in the longer-term as the transition to e-mobility accelerates (it will therefore be important to combine near-term reforms with alternative funding mechanisms, such as distance-based charges, to avoid risks of budgetary shortfalls). Given that diesel excise duties tend to be lower than those of petrol, both in WB6 countries and the EU (see Table 4), potential reforms could consider a relatively higher increase of the diesel tax rate to better internalise additional air pollution impacts of diesel compared to petrol vehicles.

Petrol and diesel prices in the WB6 are in most cases lower than the EU average in nominal terms, but are higher than the EU average when adjusting for purchasing power parity, underscoring the importance of properly accounting for distributional impacts (see Figure 13 and Figure 14). Room for fuel tax increases in the region might be limited, given the current tax levels (already relatively high, if compared with other emerging economies) and the purchasing power in the region (which is lower than the EU average). Hence, given the circumstances of individual WB6 countries, reforms of road transport fuel taxes are recommended particularly when there is a need to align with the EU Energy Taxation Directive,[36] and as long as the reforms can generate additional fiscal revenues to be reinvested in the economy. Any negative equity implications arising from this policy should be carefully assessed and addressed, for example with redistributive budget allocations and measures to foster a fair technology transition, as well as less carbon intensive transport modal options such as non-motorized transport, public transport, and rail. Furthermore, contrary to common belief, vehicle and fuel taxes increases can be implemented in a progressive way if properly communicated and coupled with supplemental actions to address demand and support vulnerable groups. This takes into consideration that most urban poor are users of public transport modes rather than private vehicles and revenue sources can be invested to improve these modes.

Figure 13. PPP Corrected Petrol Prices (in EUR/liter) in WB6 Countries and Compared to the EU27 (Avg. 2022 Price)

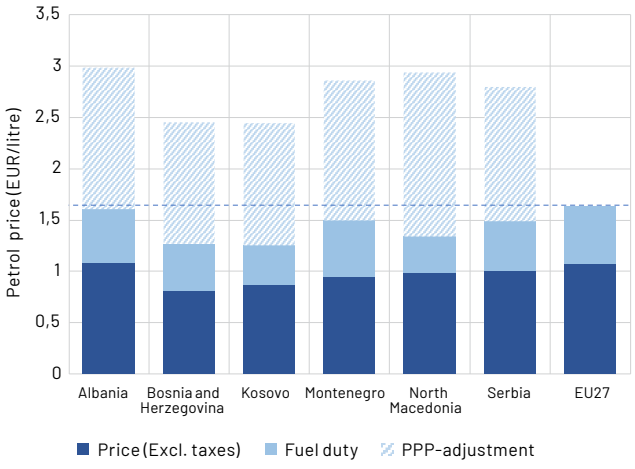
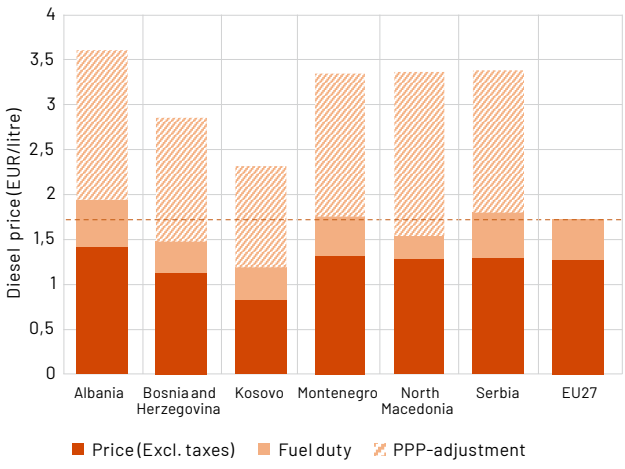


Figure 14. PPP Corrected Diesel Prices (in EUR/liter) in WB6 Countries and Compared to the EU27 (Avg. 2022 Price)



Source: World Bank 2024

[36] This is the case of North Macedonia tax on diesel, which ranges between 0.25-0.30 EUR/Liter (L), hence below the 0.33 EUR/L EU Energy Tax Directive minimum. If the proposed revision of the directive is considered, i.e., 0.39 EUR/L for diesel, also Kosovo (0.36 EUR/L) and Bosnia and Herzegovina (0.36 EUR/L) would fall below the directive minimum.

Strengthen and enforce regulatory requirements

A first step for less carbon-intensive and cleaner fleets should be to create an appropriate enabling environment to pursue new greener vehicles and correct the increasing challenges associated with the secondhand vehicle market. A starting point would be stricter emissions standards for both light- and heavy-duty vehicles, matching emerging EU standards (European Commission 2020d) (European Commission 2019) (ICCT 2019). A 2020 International Council on Clean Transportation global study (ICCT 2020) that assessed the emissions reduction potential in the transport sector suggested that even when meeting ambitious EV sales targets, more than half of the projected emissions reductions by 2050 for passenger cars, commercial trucks and buses, can be achieved through improvement of the fleet's efficiency. Implementing stricter fuel economy and emissions standards for vehicles also often results in improvements in vehicle roadworthiness and road safety. This can help foster a burgeoning market for alternative-fuel vehicles, opening new opportunities for jobs in green manufacturing and reducing trade costs.

Current lax regulations for secondhand vehicle imports need to be strengthened in most WB6 countries. High import rates necessitate strong regulations on both import restriction and standards as current regulations result in a highly polluting vehicle fleet. As shown in Table 5, according to the United Nations Environment Programme (UNEP), in 2024 only Albania and Bosnia and Herzegovina have a regulatory environment which is rated as "very good" for light-duty vehicles (UNEP 2024), but still "very weak" for high-duty vehicles (UNEP 2024a). Serbia currently requires Euro 3/III emission standard for secondhand light duty and heavy duty vehicles, but is considering a transition to stricter Euro standards in the "Air quality programme for the period 2022-2030" (Serbia Ministry of Environmental Protection 2022) with gradually stricter minimum Euro standards for secondhand imported vehicles. Reducing age limits for imported vehicles is another way to improve the quality of vehicles on the roads; this measure has proven to be effective in Kosovo which introduced a maximum age limit of 10 years on vehicle imports in 2018 (World Bank 2019c). Stricter regulations on secondhand vehicle imports based on their euro standard may also bring some indirect benefits in terms of GHG emissions, as a younger vehicle age tends to be positively correlated with fuel efficiency,[37] all other factors being equal (size, power, driving conditions, etc.). Furthermore, the introduction of regulatory requirements on energy efficiency or CO_2 emissions performance for secondhand vehicle imports could also lead to significant GHG emission reductions. This could take the form of upper thresholds of energy use or CO_2 emissions per km for imported secondhand vehicles, differentiated based on weight or footprint (World Bank 2024).

As freight transport volumes on the road increase in the WB6 countries (OECD 2021a), regulations and incentives for cleaner heavy duty vehicles are needed to address air pollution and carbon emissions. WB6 governments should consider implementing stricter regulation standards for heavy duty vehicles, such as was done by the EU in 2019 (European Commission 2019). Defining targets for fleet-wide average CO_2 emissions of newly registered trucks and lorries for manufacturers is expected to significantly contribute to emission reduction and to reducing fuel consumption csts for transport operators. In order to financially support the process of shifting toward cleaner vehicles, a scrappage scheme for small enterprises could be envisioned (Transport for London n.d).

[37] This is the case only when the original market enforced stricter GHG emission standards in parallel with stricter pollutant emission standards.

Table 5. Regulations regarding (secondhand) vehicle imports

Country	Age limit for vehicle imports	Light Duty Vehicles (LDV)		Heavy Duty Vehicles (HDV)		Regulatory environment (according to UNEP)	
		New	Used	New	Used	LDV	HDV
Albania	15 years (HDV only)	5	4	V	III	Very good	Very weak
Bosnia and Herzegovina	7 years	6	5	VI	V	Very good	Very weak
Kosovo	10 years	-	4	-	IV	-	-
Montenegro	-	6	4	VI	IV	Very weak	Weak
North Macedonia	-	6	4	VI	IV	Weak	Very weak
Serbia	-	5	3	V	III	Weak	Very weak

Source: World Bank 2024; UNEP 2024; UNEP 2024a.

Replacing vehicles fulfilling only Euro 3 standards or lower should be considered as a priority for WB6 governments. A World Bank study (World Bank 2022b) on the potential of e-mobility in Serbia estimated that while a strong incentive program could lead to a share of 5 percent electric vehicles in the national fleet, the replacement of below-Euro 3 vehicles was needed to reach a reduction of particulate matter of 70 percent up to 2030.

The management of vehicle fleets once in use — including inspection, enforcement, and maintenance — is just as critical as the regulation of vehicle sales/imports. Inspection and enforcement programs as well as investment in domestic vehicle maintenance and repair industry can help ensure that vehicles—both light-duty and heavy-duty—are roadworthy in terms of safety and emissions throughout their life and reduce trade costs. Secondhand vehicles imported by WB6 countries often have outdated safety and emissions technologies, which can be exacerbated by poor maintenance and wear-and-tear, removal of safety and emissions technologies, unregulated structural modifications, and unchecked operations once in use. Legal frameworks ensuring the roadworthiness of the fleets with respect to vehicle emissions are insufficient in the region, and periodic vehicle technical inspections are mainly concerned with road safety aspects in most WB6 countries. Emission checks do not seem to be consistently and effectively performed across the region (World Bank 2024a). National governments should enforce emission control tests as part of vehicle roadworthiness procedures, and set up a Motor Vehicle Information Management Systems (MVIS) that collect and store data not only on vehicle entry (e.g., first-use certification), but also on active use (e.g., periodic technical inspection) and vehicle exit (e.g., end-of-life vehicle management) (World Bank 2021e).

Ensuring that countries in the WB6 can effectively monitor emissions of secondhand vehicle imports is a priority. Emission controls are not systematically performed for secondhand vehicle imports and, when they are, resulting data are not used to enforce secondhand vehicle import regulations on minimum emission standards (World Bank 2024). Ensuring access to high quality vehicle technical data and maintenance records, already covered by the EUCARIS database (the European car and driving license information system) or an updated version of it (such as the MOVE-HUB electronic system envisaged by the recent proposal of an end-of-life vehicle regulation by the European Commission) (European Commission 2023b) is critical for the WB6 to develop and enforce effective legislation controlling secondhand vehicle imports.[38] Access to these databases could effectively reduce

[38] There is no precedent to date of granting access to EUCARIS to non-EFTA (EFTA: European Free Trade Association) members. Thus, the Transport Community and the European Commission have a key role in facilitating access to EUCARIS, working together with WB6 national authorities.

resources dedicated to homologation validation and technical inspection for vehicles imported from the EU, enabling a better governance of vehicle inspections.[39]

Age limits for both passenger and freight road vehicles in use and end-of-life vehicle programs can further contribute to improvements in road transport. End-of-life vehicle programs are necessary to address how vehicles are replaced or retired and ensure that the active vehicle fleet keeps up with increasingly stringent regulations for fuel economy and safety. These strategies can help get outdated vehicles off the road and ensure an environmentally friendly scrappage or recycling process.

Accelerate e-mobility rollout

In parallel to the greening of the vehicle fleet, the region needs to prepare for the transition to electric mobility. E-mobility should be seen as part of a program of actions to improve the environmental performance of the vehicular fleets. EVs cannot single-handedly solve all transport challenges in developing countries. They need to be pursued as part of broader plans toward a sustainable mobility transition. The EU's ambitious goal to have 30 million zero-emission cars in operation in 2030, compared to the 1.8 million operating in 2020 (European Commission 2020e), is also likely to foster developments in the WB6. Whereas the EU reached a share of 15.5 percent fully battery electric passenger vehicles in 2023 (European Environment Agency 2023) the current penetration of e-mobility in the WB6 rolling stock (OECD 2021c) is negligible.[40] E-mobility is still incipient and will depend on the six Western Balkan countries' ability to install charging infrastructure, implement policy measures and mobilize e-vehicles (including electric buses, passenger cars, motorcycles, e-scooters, etc.), while building the knowledge base and institutional capacity to deploy it or to create an enabling environment for the private sector to mobilize. This will require improvements in governance around-e-mobility, with clear responsibility allocation and coordination across institutions, or potentially establishing dedicated agencies or departments to lead the development of e-mobility policy framework. Part of the e-mobility agenda can be carried forward in partnership with the private sector, but for this national and local governments need to create an enabling policy environment.

Aspirations to achieve e-mobility will also need to be reconciled with the market circumstances, as e-vehicles are still more costly to the individual user. This will still be the case for the short term until e-vehicle pricing is more competitive and while relevant policy actions are implemented to disincentivize more polluting vehicles. This is particularly relevant in the context of a market characterized by low prices of imported vehicles (e.g., 70 percent of the vehicles sold in Albania in 2022 had a price below 5,000 euros) (World Bank 2024a). Subsidies and tax incentives for e-vehicles, akin to other EU countries, should be carefully assessed given the limited number of new cars entering the market in WB6 and the risk of an increased inequitable distribution of limited governmental resources.

Highly utilized fleets can be an entry point for e-mobility as these would benefit the most from reduced operational costs. Buses, taxis, car-sharing services, light commercial vehicles, and other

[39] In particular, EUCARIS data on digital certificates of conformity would streamline the homologation validation process, while data on periodic roadworthiness tests would reduce the need for additional technical inspections for secondhand vehicles. Other vehicle data such as vehicle registration document, license plate, mileage, and vehicle owner, would also facilitate documentation checks for secondhand vehicles registration in the six Western Balkan countries.

[40] Detailed data on the specific numbers of alternative drive vehicles differentiated by type of fuel are scarce. However, available data shows that in Bosnia and Herzegovina less than 1 percent of passenger vehicles with alternative drive are electric vehicles. Montenegro had a total of 145 registered electric passenger vehicles in 2019 and North Macedonia accounted for 33 electric passenger vehicles. Serbia accounted for 61 newly registered electric passenger cars in 2019 and Bosnia and Herzegovina had 16 new registrations of electric passenger cars in 2019. Hybrid passenger cars (electric-diesel or electric-petrol) accounted for 485 vehicles in BIH in 2018.

fleets characterized by high annual mileages, are more likely to offset the higher purchase costs of electric vehicles through reduced operational costs. The early uptake of EVs in fleets would not only improve the business case for investment in EV charging infrastructure (mobilizing private capital), but would also increase the future availability of electric vehicles in the secondhand market in the region. Policies supporting the electrification of fleets could also integrate retrofitting programs, thus creating opportunities for local enterprises to intercept part of the EV manufacturing value chain. There are already isolated examples of good practices in the WB6. For example, the Municipality of Tirana, Albania, gave priority to recently produced and environmentally friendly (electric, hybrid and Euro 6) vehicles for access to additional taxi licenses. Starting in 2016, this has led to increasing investments by several operators to deploy electric vehicles and invest in charging infrastructure (EnerNETMob 2021).

Despite isolated examples, the region lacks coordinated and planned action. In addition, the responsibility for promoting electric vehicles and for regulating and deploying charging infrastructure is not well defined in WB6 countries. To overcome this problem, three key recommended actions are to: i) Prioritize the establishment of dedicated entities or coordination platforms to lead the development of required legal and policy frameworks pertaining to e-mobility and charging infrastructure, including a national plan, a strategic roadmap, the definition of policies, regulations, and coordination with other government agencies, industry stakeholders, and the public (World Bank 2024); ii) Introduce regulatory requirements for the rollout of electric vehicles in public fleets (e.g. buses, taxis, car-sharing services, and light commercial vehicles) to support equitable and self-sustaining EV deployment; and iii) Pair the requirements above with requirements and/or incentives specifically targeting electric vehicles in the context of regulations on energy efficiency and CO_2 emissions per km, both for new vehicles (in line with what has happened in the EU) and secondhand imports.

The Transport Community Strategy for Sustainable and Smart Mobility in the WB6 highlights the need to leverage private funds and public-private partnerships to ensure rapid deployment of charging infrastructure (Transport Community 2021). The number of charging stations per 100km of roads was 6.5 in the EU, all WB6 countries offer ratios below 0.7. Bosnia and Herzegovina had the highest number of e-charging stations in the WB6 in 2022, with 93 publicly accessible charging stations, followed by 86 stations in Serbia (CONNECTA 2022a). Supporting measures to accelerate the deployment of the EV charging infrastructure include facilitating administrative procedures to obtain installation licenses and setting adequate pricing regulation to ensure commercial viability, as they would reduce the costs to businesses and reduce deployment times. An efficient use of resources could also be ensured by creating hubs of shared charge points for highly utilized fleets, improving utilization rates (World Bank Group 2024a).

Improved governance and policy frameworks are also important to foster private and publicly accessible EV infrastructure. Adding to technical standardization and licensing of charging points to facilitate implementation and interoperability for vehicle fleets, specific policy actions include (i)Technical specifications on private charging infrastructure targets for off-street charging infrastructure in public garages and new private/renovated private garages, in line with those of the EU Energy Performance of Buildings Directive; and (ii) Regulations with targets and technical specifications on publicly accessible charging infrastructure in line with those of the Alternative Fuels Infrastructure Directive.

In addition to the provision of infrastructure and fiscal incentives supporting the uptake of e-mobility, WB6 countries will have to develop a robust legal framework for e-mobility that aligns with EU standards. The WB6 countries are already becoming an importer of secondhand electric vehicles, which

is an opportunity for penetration of e-mobility. In 2021 (until September), the share of used e-vehicles out of the total e-vehicles imported from the EU amounted to between 15 percent in Albania and 56 percent in Kosovo (Eurostat 2021b). Like for internal combustion engine (ICE) passenger cars, defining import standards for secondhand e-vehicles is important to ensure safety and environmental standards, as well as technical requirements (e.g., driving ranges) are met.

The electricity grid also plays an important role in mobilizing e-vehicles with low environmental impact. Countries like Albania and Montenegro have the greatest potential for short-term, clean e-mobility as their electricity grid is already more reliant on sources that are not as carbon intensive. In other countries, this green energy transition will take longer as the grid is heavily dependent on fossil fuels, and short-term electrification achievements would be more aligned with efficiency and air quality objectives (see Box 4).

Box 4. Choosing low-emission buses for Pristina.

In 2019, the Municipality of Pristina was provided with the World Bank analytical and advisory support (World Bank 2019c) to assess options for low-emission bus technology. From an environmental perspective, the study concluded that hybrid buses were at the time the optimal solution for Kosovo as they reduce energy use, emissions, and noise by around 25 percent compared to Euro VI diesel units. With the current very high-carbon grid factor of Kosovo (1.34 $kgCO_2/kWh$), electric buses would result in increased greenhouse gas (GHG) emissions. If electricity produced in Kosovo becomes cleaner, with a carbon grid factor of at least 30 percent lower, then electric buses would be the best solution concerning GHG emissions. Regarding local pollutants, electric bus has zero combustion emissions for NO_x and $PM_{2.5}$, although some non-combustion related $PM_{2.5}$ emissions from brake, tire, and particle re-suspension.

Fast-charged Battery Electric Buses (BEBs) were recommended as the option with the lowest total cost of ownership for Pristina. Although the initial investment is around double that of a diesel unit, they were estimated to recover this investment due to much lower energy costs. This is due to the prevailing very low electricity prices. With the modernization of the grid, it is expected that electricity prices will increase in the near future. Fast-charged BEBs were estimated to be able support up to double the current electricity price before being costlier than diesel buses. However, the electric grid is currently not in a condition to take on the high loads which are required with high-powered chargers of 300–400kW for fast-charged BEBs. Therefore, in the short-term hybrid units were deemed more appropriate. Once the grid is stabilized and the carbon grid factor drops, electric buses would be the financially and environmentally most attractive option.

The largest pollution impact would result from replacing old and small units with large new buses if service quality levels are maintained. One large new diesel Euro VI bus reduces emissions by over 95 percent of $PM_{2.5}$ and NO_x and around 40 percent of GHG compared to operating the same routes with the current small diesel units. The largest impact is therefore clearly on replacing the current small units with larger modern buses, which is the approach the Municipality of Pristina is carrying forward as the main bus fleet replacement action. The Municipality of Pristina intends to also purchase several electric buses and implement charging infrastructure to start building the capacity of the sector.

Ensuring that supply chains are adequately and sustainably developed is critical to support the e-mobility transition. Doing this requires taking a life-cycle approach, making sure that mineral extraction supports the transition without causing environmental damage, and making provisions for recycling facilities for battery materials (Cazzola and Santos 2023) (ITF 2021b) (Global Fuel Economy Initiative 2021). Including electric vehicles in green investment frameworks is also another important step that shall be added to e-mobility policy frameworks in the WB6, and one where coordinated action with multilateral development banks could make a positive impact (Cazzola and Santos 2023).

WB6 should also start planning for the potential risks to the road sector funding, which could change with the electrification of vehicles fleets and cleaner combustion vehicles. The combination of e-mobility penetration and the increased share of cleaner combustion fueled vehicles may be a game changer for the traditional road transport fuel-based revenue sources that fund road asset management in WB6 countries. It is therefore critical for national governments and public road companies/SOEs to proactively plan for strategic reforms to the road sector's revenue streams and to look for alternative innovative funding mechanisms and incentives, including how to create an enabling environment for private capital mobilization.

Vehicle electrification and other green motorization initiatives provide an impetus to co-develop clean energy and transport infrastructure while creating new, green jobs. The development of electric vehicle charging infrastructure along TEN-T corridors and in cities could increase demand for domestic renewable energy production and distribution; and measures to reduce the carbon intensity of domestic electricity grids would reinforce the environmental performance of electric vehicles. Data shows that, in general, investments related to electric vehicle charging infrastructure offer strong potential for new jobs, creating 7 to 22 jobs per million US$ of investment (SLOCAT 2021a).

Barriers and Opportunities

WB6 countries are still challenged on how to accelerate policy reforms for managing road vehicle emissions, despite a wide recognition that taking policy action is necessary for the WB6 agenda. Advancing Pillar 1 reforms have proven to be challenging, and sometimes perceived as politically sensitive for WB6 national and local governments due to negative public opposition around removing high polluting vehicles from the road network or any potential tax increases. Decision makers are sensitive to perceived equity impacts, the visibility of the impacts (such as delayed improvements on air quality, related to global public goods benefits). Furthermore, the multisectoral nature of this pillar of action creates challenges of fragmentation of roles and responsibilities and interinstitutional coordination (e.g. between Ministries of Transport, Finance, Environment/Climate, Economy, Interior, etc.). Important drivers such as the increased momentum for a green transition with internalization of green objectives and actions in strategic planning, the need to improve air quality in cities, and providing better alternatives to passenger cars such as walking, cycling and public transport shall be used to accelerate the agenda. This shall be coupled with a rethink on the financing of policy reform. The accession process to the EU, mobilizing private sector capital, a greater support of development partners for policy lending, and seeking opportunities for identifying fiscal incentives/revenues for some of the policies can be levers for action. Furthermore, capacity building of senior public servants in the line ministries to draft and evaluate policy reform considering economic, environmental, just transition and fiscal aspects shall be prioritized. And once there is a decision on which policy to advance, it is necessary to operationalize it at a pace that is viable in the political economy of countries, with an important emphasis on communication and monitoring.

Summary and Contributions to GRID

Managing and mitigating road vehicle emissions in the WB6 through the regulation and taxation of vehicles and fuels can contribute to all components of GRID, but has a particularly strong impact on greening the transport sector and the economy (see Table 6):

a. **Green:** Improving the fuel efficiency of light- and heavy-duty road vehicles—by far the largest contributor to transport sector GHG emissions in WB6 countries—is a clear, short-term action that can be taken to mitigate emissions and make a substantial contribution to the global fight against climate change. Higher standards on local pollutants can indirectly result in GHG benefits,[41] in fact, light-duty vehicles meeting Euro 4 standards rather than Euro 3 emit 5 percent less CO_2 per kilometer, with significantly more opportunities for GHG mitigation if newer standards are implemented (World Bank 2021e) or if regulatory requirements on energy efficiency or CO_2 emissions performance for secondhand vehicle imports are introduced (World Bank 2024). These savings compound each kilometer traveled by newer, cleaner vehicle fleets, so the sooner these policies are put in place the greater their cumulative impact will be. Similar gains can be made by improving heavy-duty vehicle emissions standards to align with the EU. Furthermore, with a greater focus on the maintenance and life cycle of vehicles, resource intensity can be reduced.

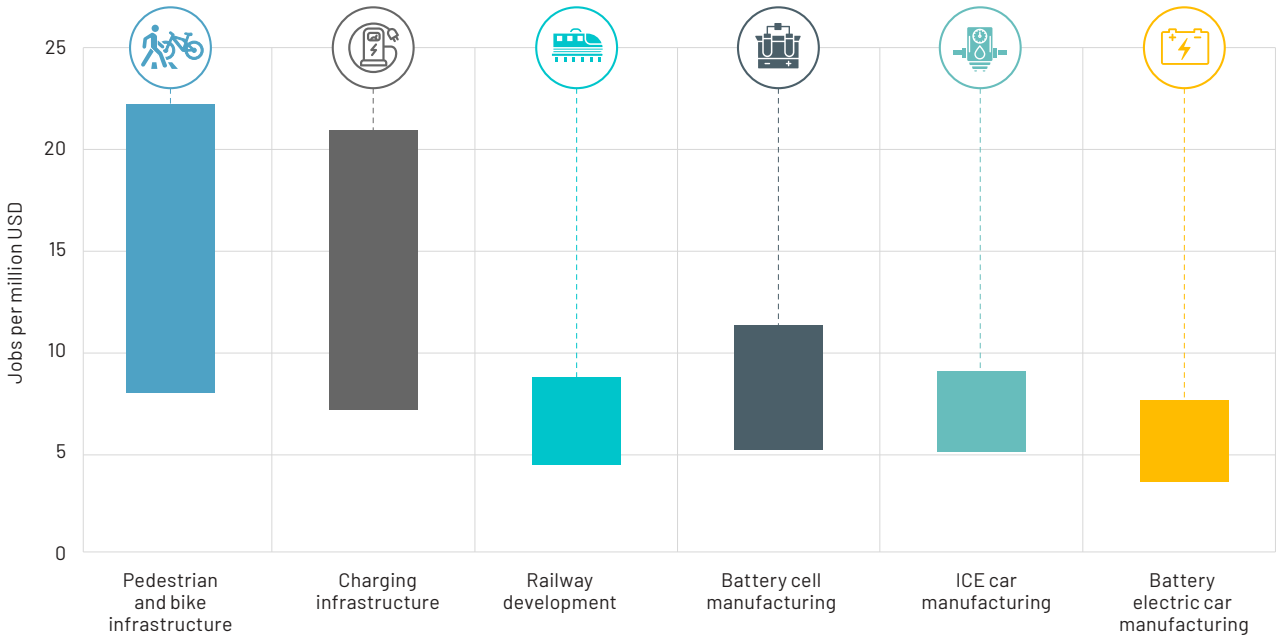
b. **Resilient:** While managing and mitigating road vehicle emissions does not impact the physical resilience of assets, it has an important role to play in economic and energy system resilience. Improvement in vehicle and fuel pricing and policies in the short term can enable longer-term transitions to renewables. Reducing dependency of road mobility on fossil fuels can help WB6 countries achieve long-term energy security, especially in a global low-carbon economy.

c. **Inclusive:** Higher emission standards and age limits for both light- and heavy-duty vehicles reduce externalities experienced by all, air quality issues, and road safety challenges. Newer vehicles are not only less polluting, but they also follow stricter safety standards that consider the needs of a more diverse group of users. However, newer and cleaner vehicles also tend to be more expensive, so addressing affordability constraints when managing secondhand vehicle imports and providing high-quality, shared alternatives to cars are key for inclusivity of transport.

d. **Economic Development:** While Serbia is the only country in the WB6 with a domestic automotive industry, the transition toward more fuel-efficient vehicles (particularly e-vehicles) creates new opportunities for green manufacturing along the energy, battery, and vehicle supply chains that embrace the ideals of the circular economy. As the EU moves rapidly toward e-mobility, WB6 countries could consider building on their strong legacy in manufacturing to assemble batteries, vehicles, or chargers for the EU and domestic markets. These activities could create many additional local jobs (see Figure 15). Reducing the carbon footprint of this manufacturing by addressing the energy–transport nexus will also be critical for ensuring the competitiveness of these burgeoning industries in global trade under carbon border adjustment or tax schemes.

[41] Stricter regulations on local pollutants may bring some indirect benefits in terms of GHG emissions, as a younger vehicle age tends to be positively correlated with fuel efficiency, all other factors being equal (size, power, driving conditions, etc.). This is the case only when the original market enforced stricter GHG emission standards in parallel with stricter pollutant emission standards.

Figure 15. Potential jobs created through green transport investments.



Source: SLOCAT 2021

Table 6. Summary of strategic actions for managing road vehicle emissions and their contribution to GRID

Action	Implementation timeline	G	R	I	D
Reform vehicle and fuel taxation	Short-term	●●			●
Strengthen and enforce regulatory requirements	Short-term	●●	●	●	
Accelerate e-mobility rollout	Medium-term	●●	●		●

Note: short-term (1–2 years); medium-term (3–5 years)
● moderate contribution; ●● strong contribution to dimension of GRID.

Pillar 2.
Efficient Regional Integration

> Encouraging modal shift and better leveraging rail and inland waterways as alternatives to the road will reduce emissions, improve the resilience of transport networks, expand access for people and markets, and ensure integration of regional economies. This should be done while road assets are properly managed to optimize the large investments already advanced.

The second pillar of strategic action for the transport sector addresses the important role of efficient regional integration in ensuring resilient and sustainable transport systems that provide connectivity for all and facilitate trade. This chapter highlights the opportunities to improve the regional and national transport system, making it more green, resilient, and inclusive and strengthening the economic development in the region. Addressing the current strong dependency on the road network by shifting more passenger and goods movement toward increased rail and waterways will improve access for people and goods transport in the region and improve the environmental performance of the modal mix. Advancing better multimodal solutions will allow the system to become more resilient toward growing natural hazards. Establishing the region as a transit hub by improving its transport system will provide a major contribution to its economic development and transition toward a greener economy.

This chapter outlines key strategic actions that national governments can take in the near- and medium-term to improve the resilience and energy efficiency of road networks and encourage greater use of low-carbon modal alternatives, such as rail and inland waterways. The chapter will start with a presentation of plans for WB6 regional connectivity, infrastructure expenditure, and statistics on transport volumes by mode. Recommended strategic actions will be shared and the section concludes with a summary of how these actions contribute to each dimension of green, resilient, and inclusive development (GRID).

Rationale

All WB6 economies recognize the need for better economic integration. The Common Regional Market initiative is structured around the four freedoms (free movement of goods, services, capital and people) while also covering aspects of digital, investment, innovation and industry policy. This is an important step in integrating these economies with each other and with the EU economy. Recent efforts have included a focus on improving trade facilitation, upgrading transport and connectivity infrastructure, and leveraging deep trade agreements within the region and with the EU. Trade and trade facilitation are especially important for the six Western Balkan countries' integration among themselves and with the EU neighboring countries. The region comprises small economies, and fragmentation limits their ability to attract largescale foreign investments and to compete effectively with firms from other countries in EU markets, let alone in global scenarios. Policies that promote economic integration can help the region to pool national resources, achieve scale economies, and create a more attractive and competitive economic environment.

The WB6 needs to strengthen and decarbonize regional transport networks to play a critical role in EU trade as a transit hub. Given the region's reliance on trade with the EU—which accounts for almost 70 percent of the region's total trade—strengthening national and regional transport infrastructure along the EU's TEN-T[42] will be critical for continued economic growth. This will require significant investment in interconnections between road, rail, inland waterway, and air networks that will support multimodal movement of people and goods while focusing on efficiency gains that contribute to decarbonization. A key priority needs to be on the investment in railway infrastructure. Currently, several main routes are planned across the region (Figure 16) (European Commission 2024), which build on the current network of about 1,560 km of rail infrastructure in the WB6 countries (2018) (Eurostat 2021c). The implementation of the EU Green Deal will raise significant trade and investment risk for carbon-intensive exporters in the WB6, who will be exposed to carbon border adjustment taxes. These taxes could disrupt export flows and lead to a loss in markets, government revenue, and assets due to declining demand and price for fossil fuels.

Figure 16. Indicative TEN-T network extension in the Western Balkans (2024)

Comprehensive Network: Railways and airports

Core Network:
Railways (passengers) and airports

Comprehensive and Core Networks:
Roads, ports, rail-road terminals
and airports

Comprehensive and Core Networks:
Inland Waterways and Ports

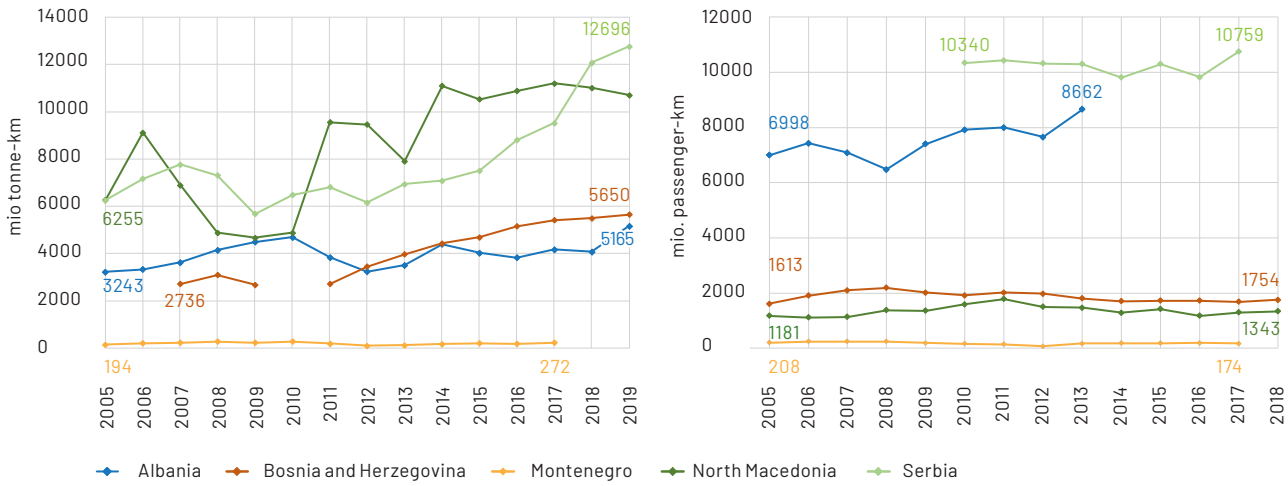
Source: European Commission 2024

Trade within the region and with EU has increased over the past years, but it remains well below its potential, both in terms of volume and composition (with a still high proportion of low added-value of goods and services traded). This is a lost opportunity for WB6 to spur economic growth and facilitate the creation of more and better jobs and opportunities within the region. While many factors are at play in these deficiencies, it has been well identified that better connecting economies and facilitating the free transit of goods and services is a necessary foundation to unleash the potential of Western Balkans economies.

[42] The TEN-T network policy addresses the development of a Europe-wide network of railway lines, roads, inland waterways, airports, ports and shipping terminals. The objective is to strengthen social, economic and territorial cohesion, through closing gaps and removing technical barriers.

Expanding regional connectivity and multimodality can help to increase passenger and freight volumes in the region (see Figure 17). Inland freight volumes have increased for all WB6 countries, except for Montenegro. In Serbia, for example, inland freight volumes have more than doubled since 2005. Passenger transport volumes have been more stable over the past decade but are expected to increase in the coming years. Multimodal infrastructure, such as rail–road terminals, need to be a key pillar in enabling green growth in the region. At the same time, there may be instances where increased connectivity could lead to transfer of economic activity to the regional centers, thus governments shall carefully look into policies to mitigate potential social and economic trade-offs such as uneven distribution of economic benefits in some regions (Quium 2019).

Figure 17. Total inland freight (left) and passenger traffic volumes in WB6 countries (right)



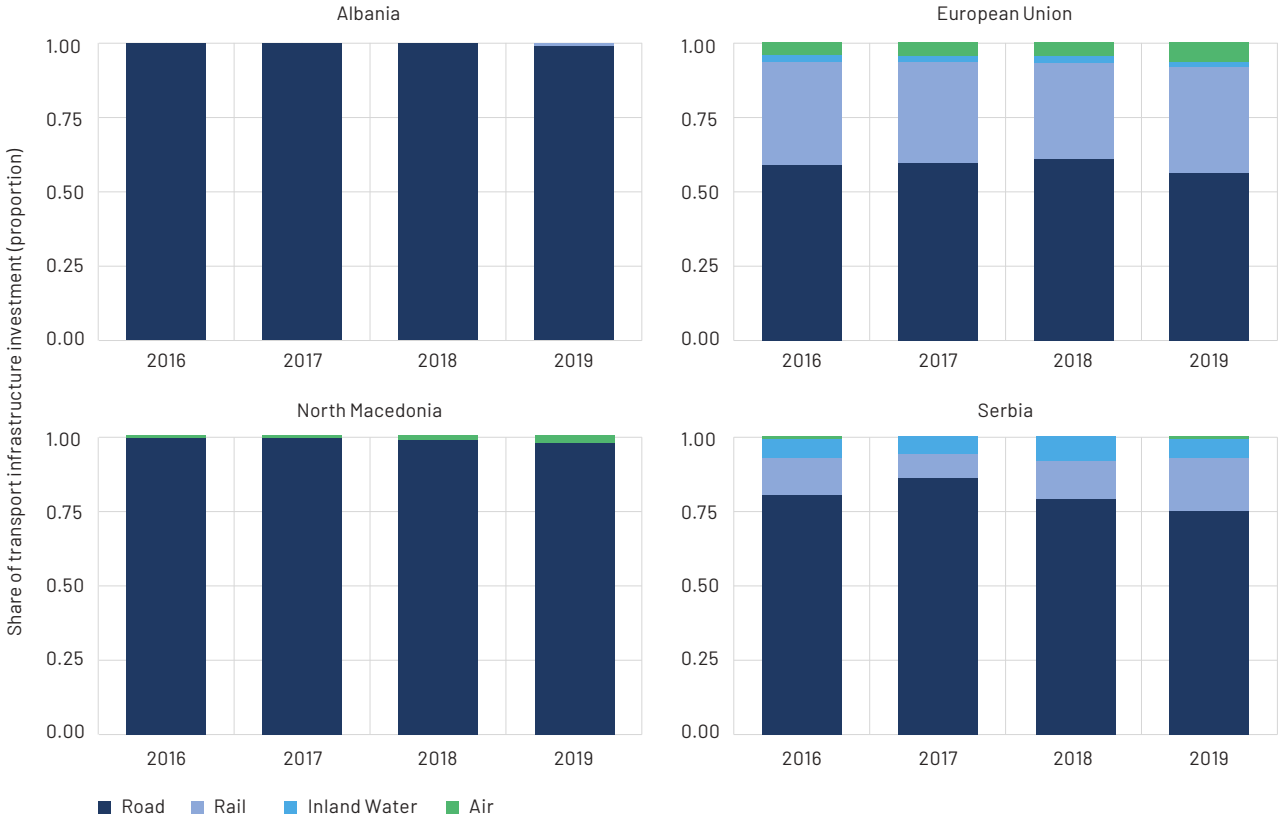
Source: World Bank elaboration based on OECD 2021d; World Bank 2020; Eurostat 2021d.

In WB6 countries, development over the last two decades has exposed an imbalance in infrastructure investment, favoring road transport. A shift in investment will allow the WB6 to better align with the EU Green Growth Strategy and contribute to the decarbonization of the region. The WB6 countries' transport infrastructure investments in 2019 accounted for 1.29 percent of GDP in Albania, 1.69 percent in Serbia, and 2.11 percent in North Macedonia. This is fairly low, despite surpassing the EU average, where transport infrastructure investments equivalent to 0.56 percent of GDP were made[43] (Eurostat 2021e) (OECD 2021e). The expenditures on transport infrastructure accounted for as much as 21 to 23 percent of collective consumption expenditure[44] in Albania and Serbia and even 32.6 percent in North Macedonia, whereas expenditures reached 7.25 percent of collective consumption expenditure in the EU in 2019 (Eurostat 2021e) (OECD 2021e). In recent years, WB6 countries have invested a large share of their transport infrastructure expenditures on roads, which accounted for almost 100 percent of transport infrastructure investments in Albania and North Macedonia and more than 75 percent in Serbia (see Figure 18). This is in stark contrast to the EU and its green agenda, which has decreased the share of transport infrastructure investment going toward roads and maintained a larger share of investment in rail (Figure 18).

[43] World Bank elaboration based on Eurostat 2021e and OECD 2021e.

[44] Collective consumption expenditure comprises the expenditures made by general government on services that benefit households collectively.

Figure 18. Share of transport infrastructure investment by sector in the EU and select WB6 countries

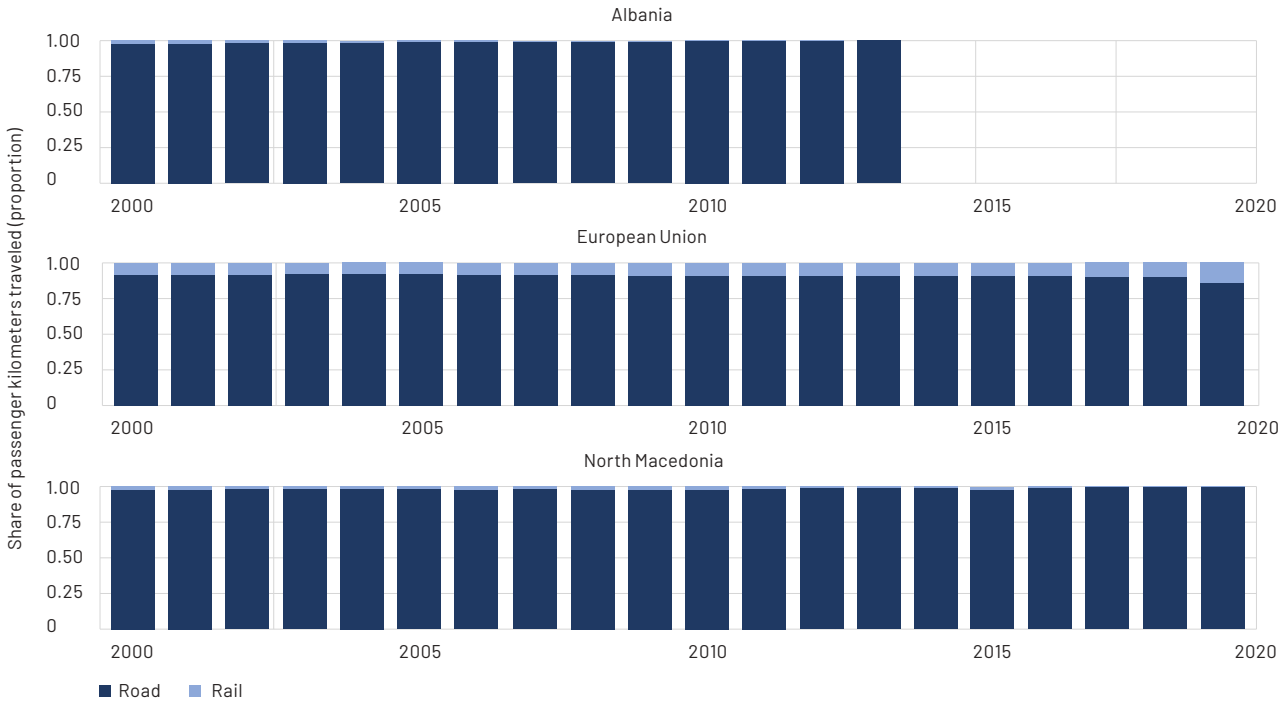


Source: OECD 2021e

Despite this prioritization of investment toward roads, road quality in the WB6 remains low. This creates reliability issues that impact economic performance and emissions and exposes significant vulnerabilities to natural hazards. The Global Competitiveness Report rates the quality of road infrastructure below 4.0 in all WB6 (scale from 1 to 7, where 7 is best). Bosnia and Herzegovina has the lowest rating of 2.8, putting the country at 121 out of 141 rated countries. There is no rating included for Kosovo (World Economic Forum 2019). Given the increased risk through climate change related extreme weather events for the region, strategic actions that improve resilience planning and geohazard risk management are therefore critically important for reducing vulnerabilities in the road sector and improving the efficiency of transport systems. This encompasses the operationalization of NDCs and other mitigation targets in national and city-level transport strategies, as outlined in the chapter CREATING AN ENABLING PLANNING ENVIRONMENT.

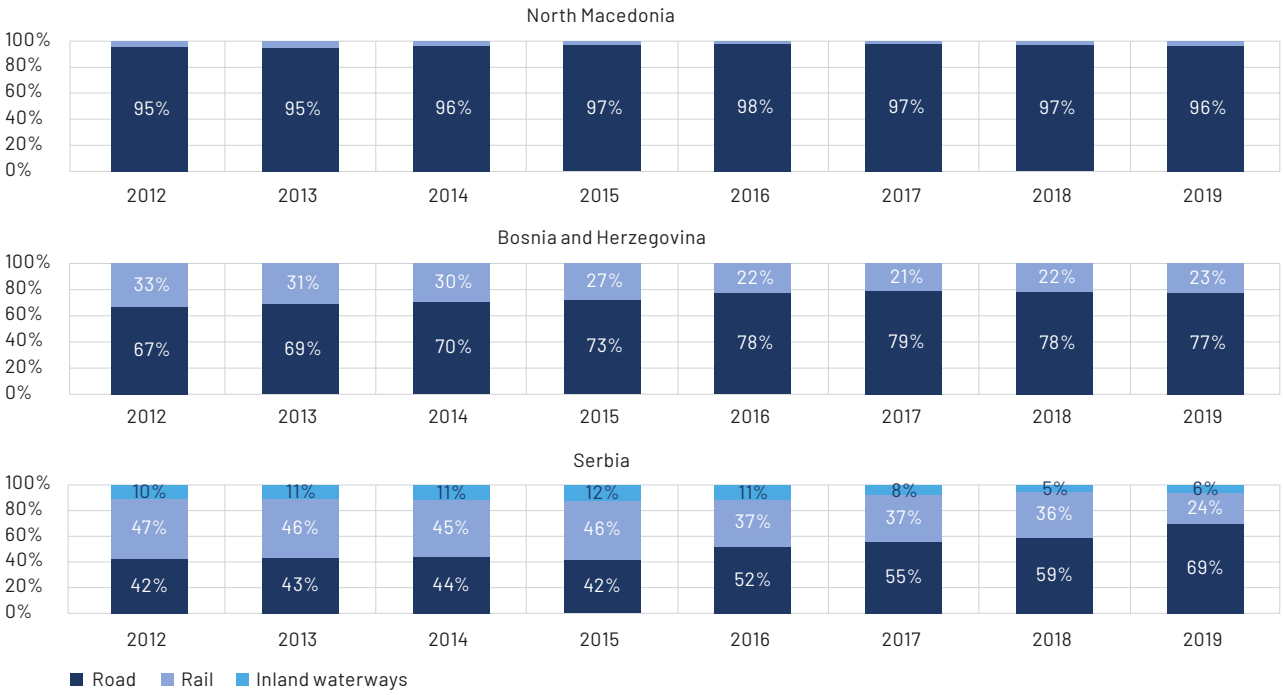
In WB6 countries, the road sector carries the lion share of passenger and freight kilometers traveled. For example, in Albania roads carry as much as 98 percent of inland passenger movement (Statistical Office of Montenegro 2021), while in Montenegro the share is just under 70 percent. Contrary to development in the EU, the share of rail in passenger transport is decreasing across the WB6. (Figure 19). When it comes to freight, roads currently carry the majority of ton-kilometers in the region (Figure 20) (Eurostat 2021). Without action on reducing the reliance on road transport and encouraging modal shift to more sustainable modes of intercity travel, carbon emissions in the region will continue to rise and contradict the latest climate commitments.

Figure 19. Share of inland passenger kilometers traveled by sector in EU and select WB6 countries



Source: OECD 2021b

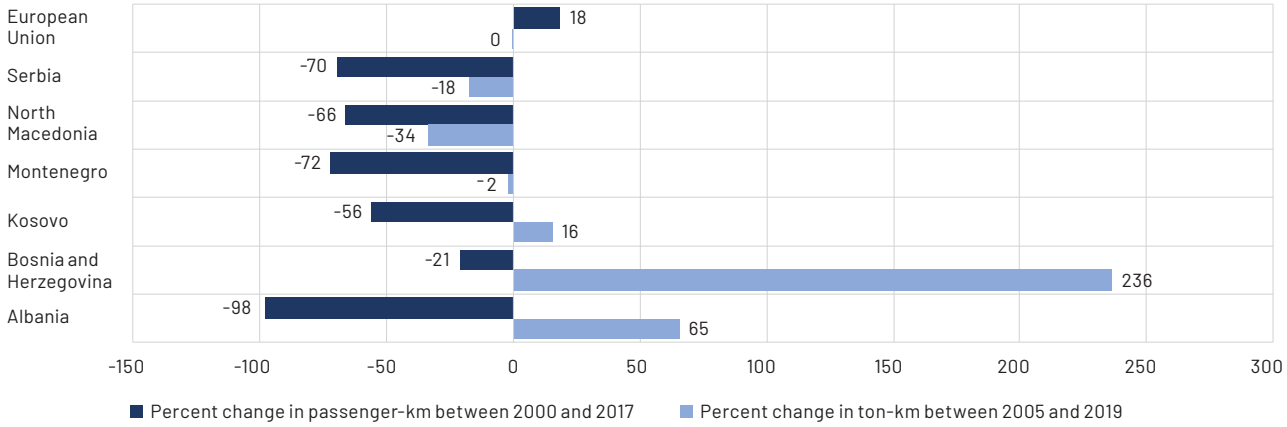
Figure 20. Modal split of inland freight transport by road and rail in select WB6 countries (inland waterway data only available for Serbia)



Source: OECD 2021b

Strengthening the railway sector in all WB6 countries is an urgent task given declining rail volumes and the potential for low-carbon economic growth in the sector. This will assist in strengthening the region's competitiveness and transitioning toward the decarbonization of the transport sector. Rail volumes have dropped dramatically in WB6 countries since 2000. Passenger volumes have seen the sharpest declines, falling as much as 98 percent in Albania (see Figure 21). This is problematic from an environmental perspective given that emissions per passenger km by road transport are approximately five times those for rail. The picture for freight is not as extreme, but there is still a worrying decline in the volumes of freight going by rail in some WB6 countries (see Figure 21). The main exception is Bosnia and Herzegovina, which has increased the volume of freight going by rail but not enough to keep up with overall increases in freight activity in the country, resulting in a declining share (see Figure 20).

Figure 21. Change in passenger-km and ton-km carried by rail in the EU and WB6 countries.



Source: World Bank 2020; Kosovo Statistical Agency 2021; Statistical Office of Montenegro 2020; Eurostat 2020

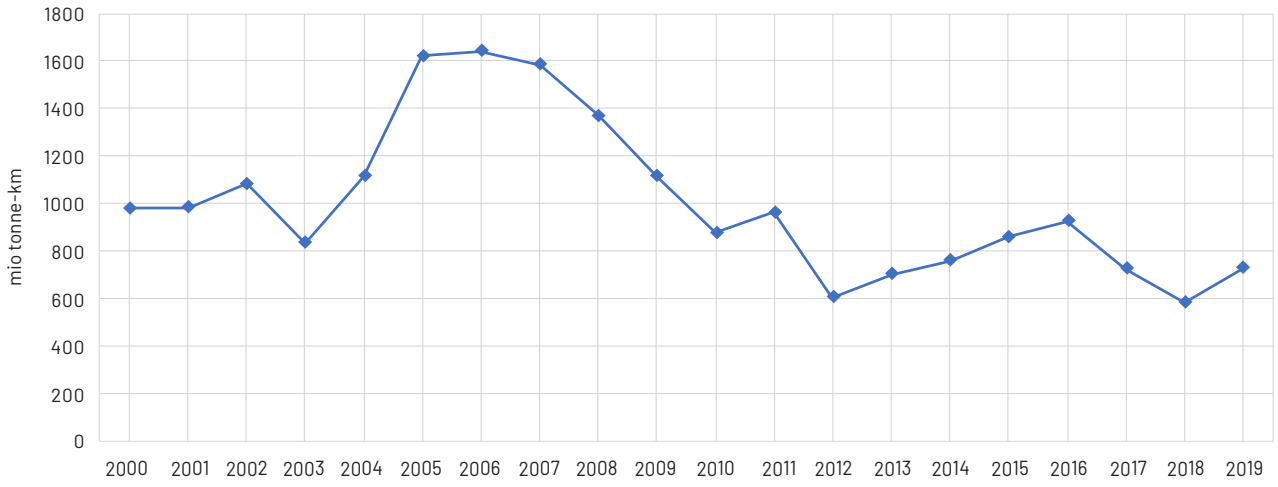
Many railway lines in the WB6 face severe issues in terms of reliability and quality of service, exacerbated by incomplete safety systems, outdated signaling, low maximum speeds, and other technical restrictions. For example, the average travel speed for rail transport reaches about 70 km/h for passenger service and 50 km/h for freight service in Bosnia and Herzegovina (Framework Transport Strategy of Bosnia and Herzegovina 2016). These issues present a critical vulnerability to natural hazards and an additional challenge for the region in achieving EU accession, since lack of compliance with planned operational speeds, train lengths, axle loads, the electrification of lines, and rail traffic management systems all pose important obstacles in the development of the Orient/East-Med TEN-T corridor (European Commission 2017a).

Despite stronger requirements in the design standards for new rail infrastructure, almost no progress has been reported in the inclusion of climate resilience and natural hazards considerations for the railway sector. The railway infrastructure in big parts of the Western Balkans is highly vulnerable to geohazards, including flooding risk in low laying areas that affects the foundations and ballast materials. Given the fact that line alignments are predominantly hilly, with numerous tunnels and bridges and steep gradients, railway infrastructure is more likely to be directly affected by extreme weather events and their consequences (GFDRR 2014). Disruptions of the physical infrastructure do not only result in high economic losses due to repair works and losses for operators, but frequently also imply long-term restrictions of regular services, resulting in long-term effects such as the loss

of customers. For instance, after the 2014 floods, the most occupied international passenger rail connection between Serbia and Montenegro (the Belgrade–Bar rail line) was interrupted for several months (European Commission, United Nations and World Bank 2014). The introduction of climate and natural hazard resilience in rail asset management systems is a crucial step to take for the WB6 authorities.

Inland waterways present an opportunity for less carbon-intensive freight transport. However, freight volumes on inland waterways are low and declining in the WB6, with the bulk of goods moving on the Danube Corridor. Serbia, the only WB6 country accounting for a relevant share of 6–7 percent of freight transport on inland waterways (OECD 2021f), has faced declining transport volumes on its waterways (see Figure 22). However, investments in water ports, such as the intermodal river–road–rail terminals in Belgrade and Novi Sad, are envisaged. There is also scope for development of the Sava River Corridor, which played an important role in the freight transport network of former Yugoslavia but has not benefited from major navigation infrastructure investment since the conflicts of the 1990s. Remnants of mines in the Sava River bed still hinder safe river traffic in the sections traversing Bosnia and Herzegovina. Due to lack of investment in navigation infrastructure, hinterland connections, and services, the Sava River has little navigability and use at present (World Bank 2020d). Both the Danube and Sava Rivers have considerable potential for the expansion of freight transport operations, which would not only support the modal shift to greener modes but also foster economic development in the hinterland (World Bank 2020d).

Figure 22. Inland waterway traffic volumes in Serbia, 2000–2019



Source: OECD 2021f.

Regional integration beyond national boundaries is key to enabling efficient logistics that support green, resilient, and inclusive economic development of the entire region. This does not only demand for an improvement of the interconnection of physical infrastructure but also for a series of trade facilitation actions including improvements of border crossings and national single windows. In the current situation, key issues pertain to border crossings in the region, a factor leading to inefficiencies and high costs. The 2019 progress report on the implementation of the Connectivity Reform Measure Management Plan (CRMMP) for the Western Balkans concludes that little progress on protocols for railway border crossings was made in the period between 2016 to 2019 (Transport

Community Permanent Secretariat 2019). Moreover, a lack of harmonized regulations for cabotage (the right to operate and transport goods within a particular territory), labor conditions for drivers, and the recognition of drivers' credentials also lowers the efficiency of the road freight sector.

Physical improvements to support regional integration through transport connectivity work best if in tandem with trade facilitation activities, and will benefit both WB6 and EU. In the Western Balkans, trade and transport policy reforms that reduce waiting time at the border by just three hours are equivalent to removing a value-based tariff of 2 percent. Reform gains are maximized when they are coordinated across economies and implemented jointly: cross-border coordination in the implementation of the package of national single window and other trade facilitation reforms would generate 8 percent higher gains than if each economy were to carry out the reforms autonomously. The impacts of trade reforms and improvements in road infrastructure would be further amplified if Western Balkan economies belonged to the EU, which would result in an additional 6 percent boost to welfare. Moreover, the accession of Western Balkan economies to the European Union would have positive spillover welfare effects for countries such as Croatia, Bulgaria, Romania, and Hungary, and negligible effects for other EU members (Gomez, Zárate and Taglioni 2023).

Strategic Actions

Align national transport plans with TEN-T and support intermodal facilities along strategic corridors to facilitate regional integration

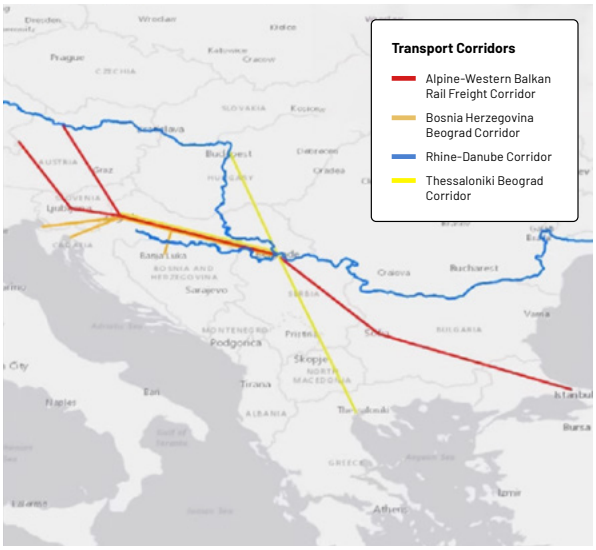
Modernization of the main transport corridors is essential for integration within the region and with the EU. Further investment is needed to ensure the region develops its part of the TEN-T as the backbone of national and international transport systems. This will require the improvement, maintenance, and intelligent expansion of existing road and especially of rail and waterway infrastructure, as less energy-intensive modes, along the existing TEN-T network planned for Southeastern Europe (see Figure 16). Furthermore, the approach shall combine trade facilitation and upgrading transport and connectivity infrastructure. Just as important as infrastructure for enhanced connectivity is the implementation of technical standards and soft measures such as aligning and simplifying border crossing procedures, railway and road SOE reforms, information systems, road safety and maintenance schemes. Important analytical work has been conducted on the status quo of intermodal facilities, as well as transport links in the Western Balkans. Concerted efforts to eliminate obstacles to trade can have a direct impact equal to an 8 percent improvement of GDP per capita. This has evidenced deficiencies in the interconnection of freight services, poor operating conditions, and low level of service of the rail network and a lack of appropriate marketing strategies among other issues (European Commission 2017a). Road infrastructural investments can generate important welfare and productivity gains, with an increase in real income of around 5 percent across all countries even under the current situation, and with the potential to further boost real income by 7 percent in the case of EU accession.

Better coordination between national and local authorities can enhance the connection between the TEN-T and urban areas. The alignment and coordination of planning instruments at national and local level, such as SUMPs and national strategies, can reduce bottlenecks on the TEN-T in cities and improve connectivity with urban transport. This can be reflected in better planning of railway stations, Park & Ride facilities, and public transport hubs.

For passenger and freight transport, intermodal connectivity is essential to ensure efficient flows of people and goods. There is a significant potential for intermodal growth on key routes in the WB6 (see Figure 23). One route connects the North Adriatic ports and WB6 Inland Freight Terminals (IFTs). A second key route is along the rail route from the coast to the Northeast and beyond, passing through Doboj.[45] A third strategic route serves the south of the region, connecting to Greece and Bulgaria. Better corridor management, including logistics digitalization and data sharing cooperation, can improve the reliability and competitiveness of intermodal transport. With the adoption of Regulation (EU) 2024/1679, the new European Transport Corridor (ETC) "Western Balkans - Eastern Mediterranean corridor" (WBEM), linking central European Member States with the ports of the Adriatic and East Mediterranean Seas via the Western Balkans, was formally defined (Figure 24) (European Commission 2024a).

Investing in intermodal terminals along these corridors could help foster significant growth in containerized freight in all WB6 countries without dramatic increases of greenhouse gas (GHG) emissions. The special requirements for some commodities may permit containerized solutions, but these will depend on handling equipment, which in turn requires investment at key transport nodes. Table 7 provides some estimates of the volumes of cargo that are currently containerized and those that could be containerized given current transport volumes. Investment to help meet these targets would be important, but the potential for large-scale containerization is limited and must be driven by private sector demand.

Figure 23. Emerging intermodal transport corridors



Source: World Bank 2020e

Figure 24. Western Balkans – Eastern Mediterranean Corridor: Rail freight, ports and rail-road terminals

Source: European Commission 2024a

[45] This is potentially the shortest route (in distance) from the central Danube plain to the coast, even if it is affected by the mountainous nature of the rail link.

Table 7. Forecast indicative terminal capacity targets (TEU)

	Existing/proposed	Target	Additional
Montenegro	-	12,146	12,146
North Macedonia	8,000	40,502	32,502
Albania	-	56,018	56,018
Serbia	105,000	105,000	0
BiH	100,000	100,000	0
Kosovo	-	35,100	35,100
Total	**213,000**	**348,767**	**135,767**

Source: Wood Environment and Infrastructure Solutions Inc. 2019

Investments on rail infrastructure should prioritize a corridor-approach along key lines, but smaller targeted investments (e.g., last-mile connectivity and logistic centers) are also needed to maximize the potential of the corridors and reap local benefits. With less than 40% of the extended core and comprehensive TEN-T rail network in the WB6 in good condition,[46] the sector faces severe issues of reliability and quality of services. Overcoming the maintenance and rehabilitation backlog will require redirecting investments and increase funding to rail and inland waterways, effectively reducing the imbalance observed over the last two decades that has significantly favored road transport infrastructure.[47] While prioritization should be given to the main lines along key corridors in the region, lower-cost investments on local lines and last-mile connectivity to industrial sites can also bring significant benefits to the system performance. Moreover, the development of logistics centers, intermodal terminals, last-mile connectivity, and IWW ports has the potential of mobilize private capital (e.g., through PPPs) to help foster significant growth in containerized freight in all WB6 countries with local economic benefits.

Focus investments in the transport sector on resilience, interconnectivity, and management

Sensible management of road, rail, and waterway infrastructure is critical for WB6 countries in the support of continued economic growth and climate mitigation. Currently road infrastructure carries the majority of freight and passenger movement in the region, but the sector remains highly carbon-intensive due to system inefficiencies (Eurostat 2021). Removing regulatory and physical barriers to cross-border flows of goods (cabotage) and improving the efficiency of trucking movements through improved coordination between shippers and receivers (via digital logistics platforms) is vital for the development of the region and can provide significant climate mitigation co-benefits.

Sustainable financing of the road sector is a critical aspect to be tackled. Given the huge amounts that have been invested in upgrading the road network, in particular TEN-T Corridors VIII and X, ensuring that adequate funds are available for maintenance and further infrastructure improvements are available, and countries of the WB6 will need to explore ways in which private sector participation in the road sector.

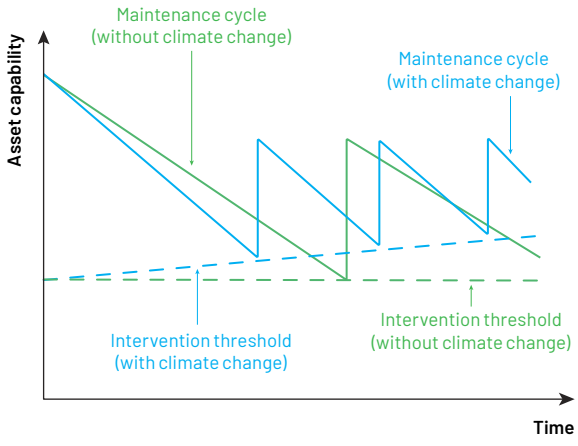
[46] Transport Community Permanent Secretariat (2023), "Development of indicative TEN-T extension of Comprehensive and Core Network in Western Balkans".

[47] In recent years, WB6 countries have invested a large share of their transport infrastructure expenditures on roads, which accounted for almost 100 percent of transport infrastructure investments in Albania and North Macedonia and more than 75 percent in Serbia.

Tariff stimulation and affordable fares facilitate intermodal transport. Financial assistance and incentives can ease the transition toward intermodal freight transport and allow a faster shift toward lower-carbon rail and waterways transport on long distance routes. Affordable fares through subsidies and regional ticketing encourage a relocation of passenger flows on sustainable modes and ease the use of multiple modes. Tariff stimulation can support the Western Balkans objective, set in the Strategy for Sustainable and Smart Mobility, of moving towards carbon-neutral collective travel for trips below 500 km, i.e., for most of the trips between Western Balkans capitals.

The resilience of infrastructure to climate change must be improved. The main regional transport networks and the extensive feeder network need to be incrementally improved to reduce network vulnerabilities. As highlighted in CREATING AN ENABLING PLANNING ENVIRONMENT, this requires improved asset management processes, better identification and assessment of vulnerabilities, and a review of national standards to address the increasingly frequent occurrence and severity of climate events. Road and railway infrastructure companies also must spend more resources on the maintenance and rehabilitation of their networks. Maintenance interventions (e.g., clearing drains, slope protection, and bridge maintenance) need to be done more regularly. For rail infrastructure, it is crucial to develop Railway Infrastructure Resilience Programs and make disaster reduction part of the national agenda. Figure 25 shows the theoretical impact of climate change on maintenance cycles and the threshold at which they must be undertaken.

Figure 25. Climate change will bring the requirement for more regular maintenance cycles



Source: World Bank 2018.

Road network vulnerability assessments should be simplified and adopted by the local and regional network so that it is feasible for authorities to effectuate vulnerability assessments within their financial and human resources. Currently, there are no guidelines and no mainstream workflow for conducting vulnerability assessments for local road assets. National governments should provide technical guidelines for local authorities and ensure their implementation through a systematic approach. For instance, defining vulnerability assessments as a mandatory part of Sustainable Urban Mobility plans (SUMPs) and other documents that set standards for local road network designs, could help guide this process at local levels. Moreover, special funds, aimed at financing interventions for increased resilience on the local level could help overcome the financial shortcomings that frequently restrain risk mitigation.

Shift infrastructure investment from road to rail and inland water transport

Improving regional transport connectivity via low-carbon modes - rail and inland waterways - is instrumental to both increasing integration and competitiveness of the WB6 economies, and to reduce transport emissions. Rail and inland waterways emit multiple times less CO_2 than trucks per unit of transport (tonne-km), and in a well-performing logistics system it can be more efficient and economical than road freight transport. As such, higher competitiveness and better environmental performance can go hand-in-hand. Unlocking the potential of rail in the WB6 region will require an integral approach

that addresses not only the infrastructure needs of the sector, but also the institutional and corporate aspects.

Expanding and revitalizing the region's rail infrastructure is critical for reversing the decline of freight and passenger movement by rail and encouraging a more sustainable and less carbon-intensive modal split in the WB6. Suitable infrastructure needs to be implemented and current systems adapted as they are in many cases not aligned with TEN-T technical standards (European Commission 2017a). Former railway lines can be revitalized if measures are taken in a timely manner. Further expansion especially along the TEN-T network as well as valuable secondary railways is also necessary. While the WB6 rail network comprises 3 Pan-European rail corridors (Corridors Vc, VIII, and X) and is part of the indicative EU TEN-T extension, these corridors are underdeveloped.

Rail offers a suitable possibility for organizing sustainable commodity movements in the WB6. A recent report on intermodal connectivity in the region (European Commission 2017a) suggests that there is substantial scope for diversion of freight on to intermodal containers and of bulk freight on to railways. The prospects for intermodal freight development in the WB6 have been affected by low levels of investment and infrastructure development. In addition, the specific requirements of what are discrete point to point flows of individual commodities need to be taken into consideration. Table 8 shows the main commodity groups and percentage going by rail, a strategy to attract more of these goods to rail is required perhaps starting with grains, building materials, and metals.

Table 8. Rail tonnages by commodity at border crossings in the WB6

Commodity	Tonnage	Rail percentage share
Grain	744,000	15.3%
Beverages	86,000	1.8%
Other agriculture	56,000	1.1%
Wood	62,000	1.3%
Fertilizer	86,000	1.8%
Paper	86,000	1.8%
Stone, sand, and gravel	413,000	8.5%
Lime, cement	515,000	10.6%
Metals	1,586,000	32.7%
Coal and carbon	642,000	13.2%
Petrol and gas	414,000	8.5%
Chemicals	164,000	3.4%
Total	**4,853,000**	**100.0%**

Source: Wood Environment and Infrastructure Solutions Inc. 2019

Shifting freight transport from road to inland waterways will be a challenging but rewarding process for the WB6. The consent and cooperation between the riparian parties is a crucial prerequisite for making investments in navigation infrastructure worthwhile (e.g., for dredging, demining of Sava River sections, development of hinterland connections). Beyond infrastructure investment, policies are urgently needed to incentivize vessel modernization, increase navigation safety, and facilitate the logistics sector in shifting to waterway-based itineraries. Enhancing inland waterways will not only

contribute to the needed modal shift for green growth but will also foster economic development in the hinterland of river ports. Especially along the Sava River and Danube River Corridors, investments will also contribute to resilience toward river flooding, to economic development (including tourism), and to opportunities for social cohesion through job creation (World Bank 2020d).

Improve market orientation of rail operators and encourage private participation

Facilitating the shifts from road to rail and inland waterways will require institutional shifts. While WB6 countries have followed the path set by the European Framework for the institutional reform of the railways sector, these may fall short of the objective of shifting freight and passengers to rail if unaccompanied by additional actions that enable railway undertakings to commercialize operations, improve customer service, and enhance financial sustainability. Rail companies need to seek new markets as demand from their conventional customers declines.

A sustainable rail sector in the long term will now require a focus on reforms of State-Owned Enterprises (SOEs). SOEs would benefit from divesting from non-core business activities in the transport sector to ensure greater market-orientation. Eventually, a more market-driven approach to the companies is needed to increase efficiency and leverage their own access to finance. Access to finance enables these SOEs to better fund their operations, invest in advanced technologies, ultimately leading to increased productivity and improved public services. Investment must align with the new business model, and pricing has to be competitive with road-based modes of transport. SOE reforms shall support (i) identifying markets and deploying new services; (ii) prioritizing profitable operations; (iii) optimizing pricing; (iv) mobilizing private investment and expertise; (v) tapping into new sources of revenue; and (vi) developing Joint Ventures (JVs) across segments, modes and regional markets. This should be accompanied by a reform of transport SOEs, which could involve appointing professional and commercial boards of directors and removing practices that are restrictive to the private sector. Moreover, given that rail transport competitiveness increases over longer distances, a focus on trade facilitation and corridor management should be strengthen, building on ongoing efforts developed within the Trade and Transport Facilitation Programs.[48]

Enhancing management of rail provision and encouraging private participation is critical for ensuring user friendly rail systems for the movement of both passengers and goods. Competition calls for higher quality of rail services in general. Regulatory barriers to cross-border flows of goods shall be reduced to allow more cost- and time-effective logistic chains. To assure the provision of service on non-profitable routes, as well as the interconnection with further service frameworks, subsidies for transport providers need to be installed and enforced. This can also include the design of the vehicles and facilities (e.g., space for stroller or bikes) or through service levels and integration (e.g., through digitalization and open data and limits for fares).

While inland waterways represent only a small fraction of the goods moved in the WB6, the sector holds potential for meeting increased demand for goods and passenger movement in a low-carbon way. Investments in the Sava and Drina Rivers Corridor present a clear opportunity for encouraging green economic growth while addressing the challenges of flooding in the region exacerbated by climate change (see Box 5).

[48] World Bank project "Western Balkans Trade and Transport Facilitation" https://projects.worldbank.org/en/projects-operations/project-detail/P162043

Box 5. Sava and Drina Rivers Corridor Integrated Development Program (SDIP)

Based on the World Bank's Multiphase Programmatic Approach (MPA), the Sava and Drina Rivers Corridor Integrated Development Program (SDIP) is a 10-year, cross-sectoral operation in the WB6. It is targeting water management, river basin management, and inland waterway transport development along the Sava River through 2030.

Among the most important tributaries of the Danube, the Sava traverses Serbia, Bosnia and Herzegovina, Croatia, and Slovenia. Despite playing a significant role in transportation prior to the breakup of Yugoslavia, the river has seen little investment since the regional conflict of the 1990s. In addition to insufficient infrastructure provision, sections of the river, specifically within the territory of Bosnia and Herzegovina, continue to be impacted by the presence of landmines, which further impede navigation. The Sava is an economic lifeline to many of the vulnerable riparian communities along its shores. Yet, the river has seen significant and increasingly recurrent flooding events—the most recent in 2014, a 1-in-100-year event that resulted in total losses of nearly 3 billion euros and affected 2.6 million people (of which 137,000 had to be evacuated and 79 lost their lives).

SDIP aims to address these multiple dimensions of the Sava as a regional natural resource — its cargo transport potential for a lower-cost, lower-carbon alternative to trucks, its economic activity driving potential, and its role in water security and flood prevention as an adaptation measure in the face of climate change. SDIP's first phase is investing in improvements at the Serbian port of Sremska Mitrovica and adjacent navigation channel. These improvements are expected to promote inland waterway transport and rail intermodal logistics, as the port will be connected to the Serbian rail network. The first phase will also mobilize grant resources to demine the southern bank of the Sava within Bosnia and Herzegovina as a pre-requisite for future transport and river basin management investments. A future SDIP phase 2 is expected to finance investments in the Sava river fairway within Bosnia and Herzegovina, where low water levels have significantly reduced navigational access over time. Since the Sava is not only a shared resource across the region but also the border between Bosnia and Herzegovina and Croatia, SDIP intends to facilitate transboundary collaboration among the riparian countries by providing a platform for regional cooperation with the support and active participation of the International Sava River Basin Commission (ISRBC).

Barriers and Opportunities

There is wide recognition of the importance of the European accession and a multi-modal transport integration agenda, however the pace of transformation of the transport sector could be accelerated if investments are properly coupled with transport sector reforms. Advancing Pillar 2 activities is widely endorsed by WB6 countries with the bulk share of investments in the transport sector focusing on motorways, and more recently rail infrastructure as well as emerging investment in waterways. While there is growing technical capacity around road building and design, there is still significant

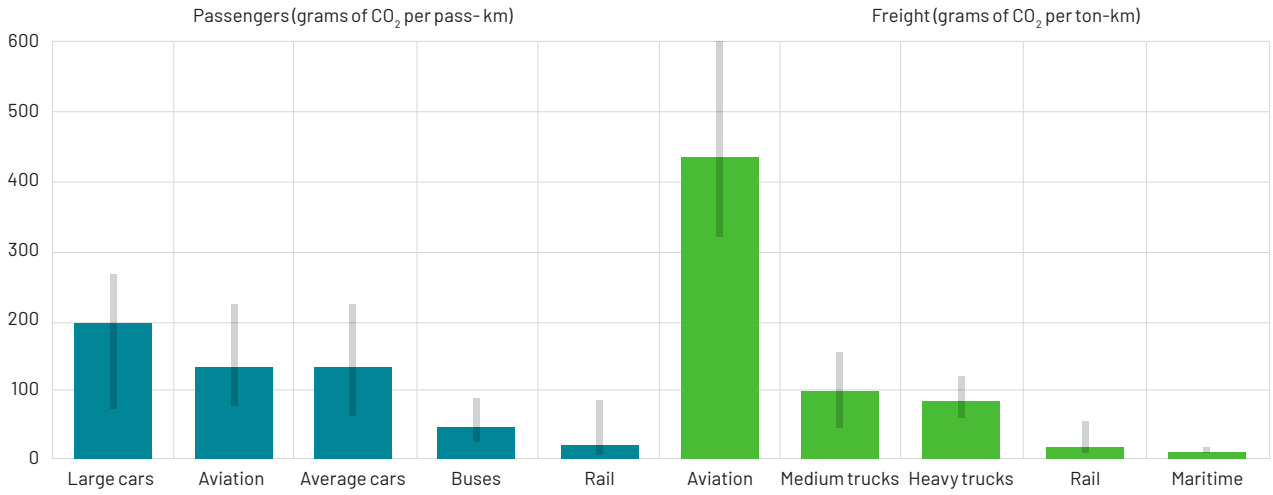
improvements needed on sustainable road asset management with resiliency considerations properly ingrained in road design, construction, and maintenance. Furthermore, new capacity needs to be established to extend these concepts to railway infrastructure. Furthermore, the region requires further necessary reforms to state-owned enterprises (SOEs), line ministries and the creation of a policy enabling environment for private sector. Opportunities lie in the sector, nonetheless, with the increased recognition of how the European integration agenda needs to work with both trade facilitation and transport investments in tandem enabling better trade corridors and improving freight movements across the region to strengthen the regional economy. This includes accelerating multi-modal transport and logistic solutions to increase efficiency for the freight sector. With currently a significant amount of funding and financing being provided by the EU (e.g. WBIF, IPA) and support by development partners, it is crucial that there is sufficient capacity within the governments to deliver on a better integrated transport system. Finally, leveraging private capital mobilization in transport infrastructure, and strengthening delivery capacity, market orientation and access to finance of SOEs and specific road and rail authorities are opportunities that are yet to fully materialize.

Summary and Contributions to GRID

Addressing the overreliance on the road network and encouraging modal shift to rail and inland waterways can foster regional integration and contribute to all components of GRID (see Table 9):

a. **Green:** Shifting passenger and goods movement from energy-inefficient road-based transport toward more energy-efficient railways and inland waterways can contribute significantly to GHG emission reductions (see Figure 26). This is particularly the case where electrification of existing railway lines is high—such as in Montenegro where 90 percent of the rail network is electrified.[49] While mode shift can provide significant opportunities for green, economic growth, there are additional opportunities for mitigation of GHG emissions within the road sector. Improvement of road-based vehicles (Pillar 1) can be complemented by operational efficiencies that can improve the economic and climate performance of the sector.

Figure 26. Average CO_2 emissions by passenger and freight transport mode



Source: IEA 2019a

[49] More improvement is needed in other countries such as North Macedonia and Serbia with only 34 percent.

b. **Resilient:** In addition to improving the resiliency standards of transport networks, building in optionality (redundancy) in multimodal transport networks improves resilience to shocks such as natural hazards. National and sub-national governments should plan multimodal networks that include important redundancies along major trade corridors to reduce the impact of disruptions on a single segment. Therefore, encouraging greater efficiency and multimodality in transport networks is a critical component of economic resilience. These measures can be greater enhanced by an enabling planning environment that adopts a lifecycle approach to climate adaptation and geohazard risk management and improves asset maintenance (see CREATING AN ENABLING PLANNING ENVIRONMENT).

c. **Inclusive:** Providing multiple options for passenger and goods movement creates a transport network that can serve a more diverse range of needs. Investments in rail connection along the TEN-T as well as secondary railways are especially important to low-income citizens and can improve rural accessibility. Management and the adoption of standards for (private) rail companies will support high quality services that consider the needs of the elderly, families, children, and all other users. Investment in the Sava and Drina River Corridors is likely to contribute to territorial cohesion through the opening up of economic opportunities in ports' hinterlands.

d. **Economic Development:** Transport networks and the quality of their interconnections play a critical role in supporting access of people to opportunities and connectivity of goods to markets. Improvements in road, rail, and waterway networks are critical for fostering regional trade and improving competitiveness in global markets. The WB6 are positioned to play a critical role in EU trade as a transit hub and, for this reason, it is expected that connectivity and intermodal investments will continue to be important in the WB6. Given the region's reliance on trade with the EU, aligning national and regional transport strategies with TEN-T will be critical for continued economic growth (European Commission 2017a). Increased coordination in logistics chains is necessary to ensure competitiveness and generate economic impact, which eventually would also result in job creation and closing the gap between the EU and WB6 markets.

Therefore, improving regional integration and encouraging multimodality of passenger and freight movement is a critical pillar for GRID.

Table 9. Strategic actions for supporting regional integration and multimodality

Action	Implementation timeline	G	R	I	D
Align national transport plans with the TEN-T and support intermodal facilities along strategic corridors	Medium- and long-term	•	••		••
Focus investment in the transport sector on resilience, interconnectivity, and management	Short- and medium-term		••		••
Shift investment from road to rail and Inland Water Transport	Medium- and long-term	••	••	•	••
Improve market orientation of rail operators and encourage private participation	Short-term	•		•	••

Note: short-term (1–2 years); medium-term (3–5 years); long-term (5+ years).
• moderate contribution; •• strong contribution to dimension of GRID.

Pillar 3.
People-centered Urban Mobility

WB6 cities account for a large share of national output and are home to a large number of firms and jobs[50], but they are facing serious migration and challenges to retain the youth. It is therefore of utmost urgency to set WB6 cities on a sustainable, resilient and low-carbon trajectory. Urban mobility is vital for tackling cities' air quality, alleviating congestion, and improving access to goods and services for all. Local and national government action is needed to achieve people-centered urban mobility through infrastructure and service improvements across all modes, but especially for walking, cycling and public transport. This can only be achieved with increased attention to urban mobility, combined with improved municipal financing and partnership with the private sector.

Rationale

WB6 cities underpin the region's economic development, with capital cities becoming economic agglomerations of their respective countries. With rural population slowly decreasing,[51] both in absolute and relative terms (World Bank 2020f), urbanization has already reached 70 percent (JRC 2019). Still, WB6 cities are relatively small in terms of population size, and urbanization is dominated by rural migration. Most of the cities have less than 500,000 residents, except the capital cities Belgrade (1.7 million) and Tirana (850,000). In some cases, more than 20 percent of a country's total population resides in cities, such as Skopje (69 percent), Tirana (29 percent), Belgrade (24 percent), and Podgorica (20 percent). The population density in the WB6 cities typically varies by around 300–450 people per square kilometer, far less than the average European city.[52] The WB6 capital cities had a share of all active enterprises in their respective countries of between 30.8 percent and 45.9 percent in 2016 (World Bank 2019).

Cities, in particular capital cities, account for a large share of national output and are home to a large number of firms and jobs.[53] The capital cities are not only concentrating people, but also economic power. In 2015, the capitals generated significant shares of WB6 countries' GDP, ranging from 23.2 percent in Sarajevo to 38.8 percent in Belgrade (World Bank 2019). While GDP per capita in WB6 capital cities is still low compared to most EU capitals,[54] it has tended to increase since the early 2000s (JRC 2016). On the contrary, most WB6 small cities have observed continuous low-density development that makes it difficult to extract benefits that can be derived from agglomeration and spatial concentration.

[50] *West Balkans and Croatia Urbanization and Territorial Review, World Bank, 2019, p. 142.*

[51] With the exception of North Macedonia where rural population has remained stable throughout the last two decades.

[52] According to European Commission Urban Data Platform Plus, the average European city's density is 3,000 residents per km2.

[53] *West Balkans and Croatia Urbanization and Territorial Review, World Bank, 2019, p. 142.*

[54] Compared to other examples in Europe, such as Ljubljana, Slovenia having a GDP per capita of US$25,000, Sofia, Bulgaria having a GDP per capita US$25,565, Zagreb, Croatia with a GDP per capita of US$21,948 or Vienna, Austria with GDP per capita being US$51,000.

The dominant spatial pattern of cities in the WB6 is distinguished by three characteristics: (1) hollowing out of the urban core; (2) expanding urban fringes, and (3) disjointed agglomerations (World Bank 2024b).

City livability and prosperity depends on the quality of urban mobility and accessibility. Urban mobility is a crucial element of everyone's day to day life, allowing access to goods and services. The more convenient, clean, and safe the mobility service is, the better the perception of the city by its inhabitants (including its work force) and investors. Urban mobility systems allow accessibility, the ease of reaching destinations. Ensuring that an adequate level accessibility of services, jobs and other destinations is provided for all parts of the population, is key to avoid social exclusion and segregation and thus necessary for inclusion and access. The resilience of urban transport networks is also critical for ensuring lifelines of connectivity and accessibility, especially in the context of a region with high vulnerability of urban infrastructure to natural hazards. Cities cannot be competitive without people-centered urban mobility systems.

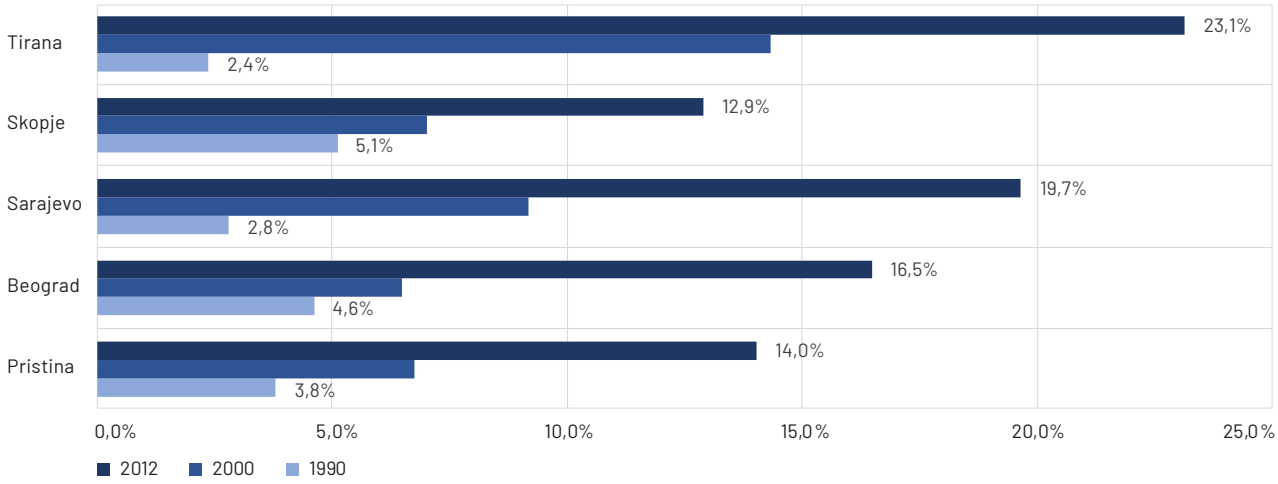
Increasing population and economic activity in cities is leading to higher motorization and more demand for transport in WB6 urban areas, putting pressure on already strained urban mobility systems. A growing population and the resulting extension of the urban area comes with key challenges for the transport system. Already, urban sprawl, inefficient public transport service delivery, and a lack of modern traffic management approaches have been exacerbated by increasing motorization. This has led to traffic unjust use of public space, congestion, extended travel times, and negative social, environmental, and economic externalities. Meeting continued growth in travel demand sustainably will require proactive management of urban development as well as key transport sector improvements in public infrastructure and services. If alternatives such as public transport, walking, and cycling are not more actively promoted, greater household purchasing power will lead to an exacerbated shift toward motorized mobility as cars get affordable for a broader range of the population. This would propel WB6 cities further on their current, unsustainable urban mobility development path. At the same time, a lack of accessibility of jobs, services and other destinations by public transport and active modes, is likely to reinforce social and geographical economic disparities in urban areas.

Congestion and poor air quality combined are major problems for WB6 cities, severely impacting livability and economic development. Reversing the trends of increasing deterioration of air quality and growing congestion to make cities more competitive and attractive requires prioritizing policy and investment in urban mobility and inter-urban transport patterns now. These challenges at the local level are significant and present major hurdles for the EU accession aspirations of the target countries. WB6 cities are at a crossroads and need to make decisions that set a path for efficient and less carbon-intensive urban development. As cities are the most important economic centers for WB6 countries and concentrate most of their jobs, social and economic activities, improving their accessibility and connectivity will be critical for economic growth and livability.

As cities grow, their contribution to local and global emissions will grow. Cities in WB6 also typically have an organized historic urban core but tend to grow in an unplanned manner at the urban periphery, which exacerbates air pollution and GHG emissions (World Bank 2024b). Transport is already an important contributor of CO_2 emissions in cities (Figure 27), and the share of transport emissions is expected to continue to grow as it did over the last three decades. As GHG emissions from transport in cities have a very high mitigation potential, improving the situation through enabling mobility solutions and tackling GHG emissions and air pollution can go hand in hand. In a business-as-usual scenario, predicted growth

will not meet the requirements of a green transition for the transport sector. For example, the "no change" scenario in the Belgrade Sustainable Urban Mobility Plan (SUMP) suggests that the share of motorized transport will increase from the existing 24 percent to 40 percent in 2031, leading to a significant increase in CO_2 emissions (Belgrade City Administration 2021), whereas public transport and walking are on the decline. CO_2 emissions from transport are expected to increase by more than three times (320 percent) to 160 tonnes in 2031, compared to 50 tonnes in 2015 (Belgrade City Administration 2021).

Figure 27. Share of transport in total CO_2 emissions in selected cities



Source: Joint Research Centre (JRC) 2019

Air pollution is an increasing health threat that is impacting the prosperity of WB6 cities. Some WB6 cities are ranked among the worst internationally in terms of air quality. According to the World Air Quality Report 2023, 8 out of 15 most polluted cities in Europe are to be found in the WB6[55] and often exceed World Health Organization (WHO) air quality recommendation thresholds (World Bank 2019a) (IQAir 2024). Out of 114 global capital cities, Sarajevo ranked 23rd worst in the world in 2023 (IQAir 2024), with a severely high pollution rate. Pristina, Belgrade, Skopje, and Tirana are also often cited among the cities with the worst air pollution in Europe, regularly exceeding recommended limits for $PM_{2.5}$, PM_{10}, and SO2 (Banja, Đukanović and Belis 2020). Additionally, NO_2 annual average values by far exceed the new WHO Global Air Quality Guidelines of 10 µg/m^3 at most measuring stations (EEA 2020).

Air pollution comes at high social costs. Air pollution in WB6 cities is estimated to cause 4–19 percent of total mortality and reduces life expectancy by up to 0.4 years to 1.3 years. Approximately 20 percent of years of life lost due to exposure are a result of premature deaths of persons under the age of 65 years (Daul, Kryzanowski and Kujundzic 2019). Moreover, some pollutants (black carbon, tropospheric ozone, carbon monoxide, and volatile organic compounds) cause air pollution, while affecting the climate at the same time. Air pollution incurs significant economic costs, such as the extreme case of Bosnia and Herzegovina with an estimated US$1.32 billion loss annually in 2016, which was the equivalent of 8.2 percent of the country's GDP. Similarly, air pollution was estimated to amount to GDP losses of approximately 7 percent for North Macedonia and 3.5 percent for Kosovo (World Bank 2019d).

[55] Pljevlja, MNE (Rank 2); Tuzla, BIH (Rank 5); Zenica, BIH (Rank 6); Bijelo Polje, MNE (Rank 8); Strumica, MKD (Rank 12); Cacak, SRB (Rank 13); Tetovo, MKD (Rank 14); Banja Luka, BIH (Rank 15).

Tackling air pollution in WB6 cities is of utmost urgency and the transport sector is a large contributor. Thus, greening urban transport can significantly contribute to resolving the dire air quality issues. Urban transport-based local air emissions are becoming a greater problem in WB6 cities, typically ranking as the second or third most important contributor to local emissions after domestic heating and electricity production. For example, a recent study in Skopje estimated that transport is the greatest contributing sector to NO_x and SO_x emissions (see Box 6) (Ministry of Environment and Physical Planning of North Macedonia and Finnish Meteorological Institute 2016). In the case of $PM_{2.5}$ impacts, as with air pollution more generally, transport is also recognized as a major source of emissions, but there are few studies that have done proper, year-long source apportionment studies. Similarly, more studies are needed on actual exposure to users and general urban dwellers (World Bank 2019d). A study from 2015 estimated that transport contributed to a range of 3–11 percent of $PM_{2.5}$ emission in various cities in WB6 (JRC 2016). Some more nuanced studies have been advanced, such as a recent source apportionment study (winter 2020/2021) attributed 20 percent of total $PM_{2.5}$ concentration in Tuzla (BiH) to traffic (Tasse, Sievert and Gidhagen 2021). Another relevant reference is the Skopje Air Quality Improvement Plan (2016) that estimated that traffic represented 19 percent of PM_{10} emissions and 16 percent of $PM_{2.5}$ emissions (Ministry of Environment and Physical Planning of North Macedonia and Finnish Meteorological Institute 2016). Figures from Skopje and Tuzla thus correlate with data from the EU, where transport is attributed 20 percent of total $PM_{2.5}$ emissions (EEA 2021). A recently concluded Japan International Cooperation Agency (JICA)-funded project on air pollution control and air quality management in Kosovo also highlights that data shortage and the clarification of roles and responsibilities for emission inventories remain key issues for effective air quality management (JICA 2021).

Despite the data limitations and the need for better air quality management in most WB6 countries, it is evident that transport-related local air pollutant emissions represent a year-round environmental challenge that is getting worse as WB6 populations continue to motorize. Therefore, without setting urban transport on a greener trajectory to reduce its negative impacts on health and quality of life, WB6 countries will not be able to resolve the air quality challenges in cities now and in the future. WB6 highly polluted cities cannot aspire to be reasonable magnets to investment if they do not resolve their air quality challenges.

The aging and highly polluting vehicle fleets circulating in cities contribute significantly to local air pollution issues (City of Tirana 2018). For example, in Sarajevo the average age of the vehicle fleet is 16 years, 50 percent are diesel-fueled55, and 54 percent are still of Euro 4 standard or lower. In Skopje, more than 60 percent of vehicles are more than 20 years old (World Bank Group 2023). Also, in Tirana the growing and relatively old vehicle fleet (with an average age of 13 years) is considered one of the city's main challenges. Therefore, regional and national level action in terms of managing motorization, particularly the implementation of more stringent vehicle and fuel standards, can also help address city-level air pollution issues (see Pillar 1). This allows city governments to focus on the renewal of public transport fleets, which are often also outdated in WB6 cities. The significant average age of vehicles of public transport companies in WB6 is a widespread challenge, with examples like Belgrade (16 years), Sarajevo (23 years), and Pristina (23 years) (Belgrade City Administration 2021) (JICA 2021b).

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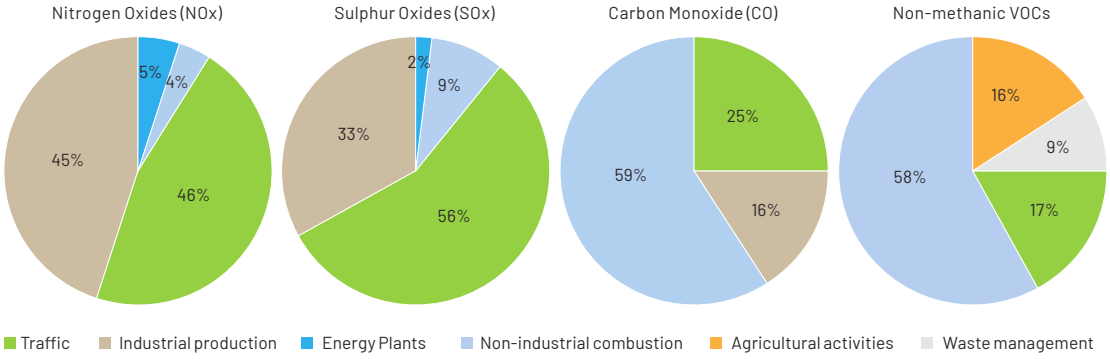
Box 6. Transport's contribution to local air pollutants in Skopje and Tuzla

A recent study in Skopje, the capital of North Macedonia, found that traffic (mobile sources) accounted for 16 percent of $PM_{2.5}$ emissions, 46 percent of nitrogen oxide emissions, 56 percent of sulfur oxide emission, 25 percent of carbon monoxide emissions and 17 percent of non-methanic volatile organic compounds (VOCs) (see Figure 28). The study furthermore estimated that traffic represented 16 percent of PM_{10} emissions and 19 percent of $PM_{2.5}$.

Figure 28. NO_x, SO_x, CO, and non-methanic VOC emissions in the Skopje Region

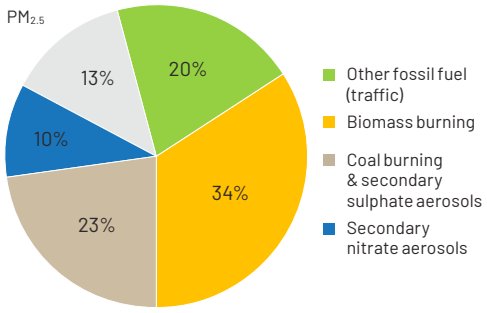


Source: Ministry of Environment and Physical Planning of North Macedonia and Finnish Meteorological Institute 2016.

For Tuzla (BiH) a source appointment study estimated that traffic is responsible for 20 percent of $PM_{2.5}$ emissions in the city area (see Figure 29).

Studies in other WB6 countries have corroborated that the transport sector is responsible for a substantial share of NO_x emissions, representing, for example, 25–30 percent of emissions in Serbia, Montenegro, and North Macedonia (UNEP 2019). In Pristina, Kosovo measurements at different air quality stations estimated transport's contribution to local NO_x pollution to be 50–91 percent (JICA 2021a).

Figure 29. Distribution of the sources of $PM_{2.5}$ in Tuzla 2020/21



Source: Tasse, Sievert and Gidhagen 2021.

Congestion, poor road quality, and road safety are already a prevalent problem in many WB6 cities. The road infrastructure and asset management practices have not been able to keep up with the rapid growth of motorization and traffic flow. This, along with the insufficient provision of public transport services and substandard transport infrastructure for active modes, has led to high levels of traffic congestion and user dissatisfaction in all WB6 large cities. For example, congestion in the city center is highlighted as major challenge in Tirana, with average travel speed on primary thoroughfares during

peak hours estimated to be 15 km/h (City of Tirana 2018). The average travel speeds on some of the most important main roads of Pristina were as low as 13 km/h (World Bank 2021e) and is declining. High levels of traffic congestion are also cited as one of the major problems in the Belgrade, Sarajevo, and Pristina SUMPs. Road quality in many cities is poor and, in some places, even lacks paved roads and therefore requires modernized road asset management systems. As such, user dissatisfaction is widespread, with examples such as 41 percent of households surveyed expressing dissatisfaction with the quality of local roads in Skopje, 24 percent in Tirana, and 22 percent in Belgrade (World Bank 2019).

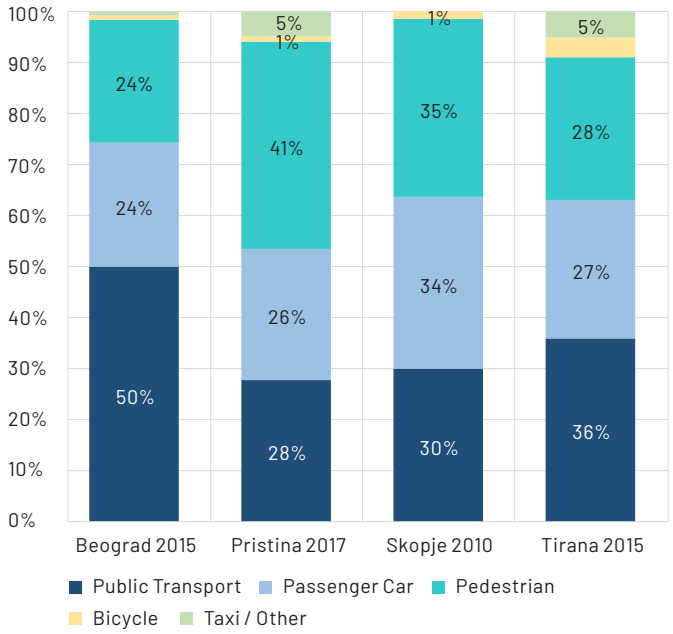
Cities face a "vicious cycle" of more sprawl and increased population with more individual motorization leading to more congestion, higher GHG emissions, air pollution, and more road-related fatalities. However, a more sustainable mobility and land-use system can turn around this vicious cycle. A compact, connected, and coordinated city is key to enabling a more economic and environmentally friendly urban future. With a more compact city development, coordination between the governmental agencies and other stakeholders (e.g., civil society, private sector), and a strengthened transport system (based on walking, cycling, public transport, and shared modes) guided by a clear vision, the vicious cycle can be stopped. This will lead to less sprawl, less motorization, better transport systems, and lower negative impacts. A better integration of land-use and transport planning is also essential to enhance access to jobs, opportunities and services for all.

The compact nature and intermediate size of many WB6 cities can support more active and sustainable mode shares; however, current trends of urban sprawl must be curbed. For example, in Belgrade, 15.8 percent of trips involve travel times of less than 10 minutes (Belgrade City Administration 2021). And, in Pristina, there is also a significant share of short-distance trips that could be made by active mobility. However, many WB6 cities are rapidly developing spatially with a challenging combination of sprawling informal settlements coupled with sub-urban clusters or satellite towns. Cities are expanding their footprint while having low population growth and sometimes even shrinking. This may have been exacerbated by the behavioral reaction to COVID-19 whereby middle and upper-income families are placing a premium on properties with higher surface for garden and open space. This city spatial layout trend is increasingly carbon intensive, and it translates to longer commuting, congestion, and inter-urban dynamics with dire consequences. For example, according to local sources, traffic flows from the satellite cities of Pristina lead to around 130,000 vehicles entering the city every day (vs. the city's 88,000 registered vehicles). Up to 46 percent of commuting is done by private cars and another 46–60 percent by bus services. Rail connections and non-motorized transport infrastructure are limited; and inter-urban connections and multimodal hubs would facilitate the shift toward more sustainable modes (Mott MacDonald 2019).

The majority of urban public transport systems in WB6 cities are based on bus services. In addition, trolleybuses, trams, and metro operate in Belgrade, while trams and trolleybuses operate in Sarajevo. Riding public transport was a norm during the era of socialism. However, urban infrastructure and services built more than 50 years ago were neglected during the breakup of socialism and the subsequent transition to the free market. Although the quality of transport systems in WB6 cities has started to improve in recent years, standards are significantly lower than in other European cities. The public transport fleet is aging, generates pollution, and falls below public expectations for quality (World Bank Group 2024a).

The cities have yet to provide premium infrastructure and service to promote public transport and active mobility. Efforts need to be undertaken to strengthen the attractiveness of greener modes, such as public transport provided by both formal and "informal" services, and active mobility (walking and cycling). Exacerbated by the impacts of the COVID-19 pandemic, it is likely that current shares of travel by public transit—between 28 percent to 50 percent according to publicly available data (see Figure 30)—are likely to fall unless quality of infrastructure and services can be improved, especially with rising congestion. As mentioned above, the SUMP for Belgrade predicts that share of public and non-motorized transport is expected to decrease, whereas individual passenger vehicle transport is likely to increase with current projections. Therefore, improving the coverage and service quality of Belgrade's public transit and active mobility networks will be critical for maintaining a healthy and inclusive urban mobility system (Belgrade City Administration 2021). In Tirana, maintaining a high share of travel by public transit and active mobility is a critical near-term goal for sustainable mobility (with the target of 70 percent in 2025) (City of Tirana 2018). In some WB6 cities, mini-vans, and unlicensed taxis provide mobility for parts of the population. As the services are not licensed or controlled in any form by the local government, these services may not be safe (often very old vehicles are used). However, this informal sector might have the potential to become a part of the transport system, particularly improving access to frequent bus routes and in the peri-urban areas (Numanovic, Franic, Bobic and Vukovic 2020).

Figure 30. Passenger transport modal split in selected cities



Source: [Belgrade]: Belgrade City Administration 2021; [Pristina] Mott MacDonald 2019; [Skopje]: Cavoli 2017; [Tirana]: City of Tirana 2018

Deficient parking management has aggravated the challenges with congestion. Demand for parking in WB6 cities has increased with personal vehicle ownership rates. Several WB6 cities have established controlled parking zones with limited parking duration, including Niš, Podgorica, Tirana, Pristina, Banja Luka, Sarajevo, Novi Sad, and Skopje. Nevertheless, relatively low parking costs and limited supervision and enforcement of parking compliance has led to parking systems which are unable to satisfy the increased demand, especially in city centers.[9] This inadequate parking management and resulting low parking turnover, has aggravated congestion levels in the city and has severely impacted greener active mobility options such as walking and cycling. Inadequate parking management hinders the effective reallocation of space for active mobility (City of Tirana 2018), and illegal parking often occupies bike lanes or sidewalks if regular controls are not enforced.

Cities have deployed varying intelligent transport systems (ITS) for transport operations, yet some need modernization, upgrade, and scale-up. Most WB6 cities lack an operational traffic management center which would enable them to control urban traffic flows more effectively. Intermediate cities mostly rely on fixed signals on signalized junctions (for example, Nis, Podgorica, and Pristina). Banja

Luka initiated the introduction of adaptive traffic control in 2020, with a pilot project and installation on one intersection only. Cameras are used to detect traffic violations, including speeding violations (Nis, Novi Sad, Pristina, Banja Luka, Sarajevo, and Belgrade). As for public transport ITS, there is no system to collect real-time data from public transport vehicles (Tirana is currently implementing one now) (World Bank Group 2024a).

There is a clear opportunity for decarbonization if planning and investing in transport systems considers the mobility patterns of all users. The mainstream transport decarbonization agenda has focused on greening the more carbon intensive mobility, thus historically biased towards managing the more motorized and male-dominated mobility patterns. A refocus is required to further emphasize making mobility behavior for both men and women more efficient and greener in the long run. Therefore, it is critical for the decarbonization agenda to capitalize on the current sustainable mobility habits of those who are greener and walk, bike or use public transport to start with, most of them women, and avoid that their predicted increased mobility happens in an unnecessarily carbon intensive manner. Furthermore, the current deep changes in the workforce planning due to home-based work and telecommuting options are bringing new gender differentiated travel patterns that must be addressed by policy at the city and national levels, with careful attention to not to place an additional burden on women.

Cities are suffering from a lack of knowledge and capacity that hinders effective planning and implementation of urban transport interventions. Cities have established governance and institutions for the strategic planning, development, implementation, operation, and maintenance of public transport, traffic management, and local roads. While many cities have urban mobility strategies or are in the process of developing them, such strategies often lack feasibility analyses and short-term investment plans. The public transport sector grapples with the imperatives of network planning and optimization, the mobilization of private sector investments and expertise, proper risk allocation between municipalities and operators, knowledge for concession design, and service monitoring. To address these issues, a comprehensive approach to public transport sector governance is needed, including the establishment and strengthening of responsible institutions, and private sector participation needs to be facilitated through market competition and appropriate contracts (World Bank Group 2024a).

PPP arrangements are limited in urban transport in WB6, being mainly used for bus operations and parking management. The scale and demand of urban transport within individual cities has not been attractive to PPPs; existing obstacles also limit the adoption of PPP arrangements to manage urban mobility, such as limited contractual agreements between public entities and private operators or legislative barriers to the separation of assets from operation. Belgrade, Sarajevo, and Nis have PPP systems to manage their public transport operation; Tirana recently introduced PPP for intercity bus terminal construction and operations; and Novi Sad, Belgrade, and Pristina have arrangements to support parking management. Other urban mobility sectors can benefit from PPPs, in particular ride hauling and shared services, urban logistics, fare collection, and mass transportation. Private bus operators would be interested in bank loans, especially to buy new buses, but in practice a bank would only grant a loan if the operator can show a contract with the authority based on an operating period of 10 or more years so that it covers almost the whole lifetime of the vehicles (World Bank Group 2024a).

While cities generally show sound overall financial management, they are financially constrained and unable to meet the growing needs for urban transport. Most cities have independent financial capacities, depend on local tax revenue, and have experience in borrowing from international financial institutions (IFIs). Cities tend to focus on keeping the system running through O&M (Operation and Maintenance

contract), having limited resources for new investments and expansions. Relatedly, some cities exhibit a high level of direct debts as a percentage of the operating balance and others depend more on state transfers. To improve efficiency and enlarge the investment into urban mobility infrastructure development and O&M, cities are encouraged to explore innovative measures to expand the base of municipal financing and attract PPPs to leverage private sector financing and efficiency (World Bank Group 2024a).

The transport sector is an important contributor to jobs in the WB6 cities. It also faces a significant gender imbalance. In Sarajevo and Pristina, for example, the transport sector employs 5.3 percent and 7.0 percent respectively of the total formal workforce, with more jobs in the informal transport sector not considered. However, there is a significant gender imbalance. 'The female workforce share in the total labor market is half that of the male share'. In Pristina, 8.3 percent of male and 4.6 percent of female workforce is occupied in the transport sector. In Serbia 80 percent of people employed in the transport sector are men and only 20 percent are women. However, more data on the transport labor market are required to further assess the situation and provide recommendations, particularly with regard to informal transport. For example, the results of a questionnaire survey with participants in Serbia, Montenegro, and Bosnia and Herzegovina suggest that about 20 percent of respondents know someone working in the informal transport sector (e.g., car repair, non-licensed taxi operations, or other transport services) (Numanovic, Franic, Bobic and Vukovic 2020).

Strategic Actions

WB6 cities, with their lower motorization rates and higher density, are in a good position to leapfrog toward a more livable city enabled by urban mobility. Strategic actions require an overall vision and plan, backed up with a budget for implementation. This would also bring important co-benefits to the air quality and equity agendas. The current developments of the SUMPs, as discussed in the chapter on enabling planning environments, are building a solid foundation for specific actions. The following paragraphs will outline some key elements for improving urban transport systems and infrastructure, allowing cities to become more compact (land-use and street design), connected (walking, cycling, public transport, shared modes and demand management), and coordinated (smart integrated solutions).

While cities have a huge potential to act themselves, national governments play a key role in enabling cities to act. As discussed in CREATING AN ENABLING PLANNING ENVIRONMENT, National Urban Mobility Policies (NUMPs), making SUMPs obligatory, and providing national funding for urban transport systems are crucial. Other regulations such as support to enable private sector investments, fiscal architecture to improve municipal financing, national emission standards, guidelines for construction and maintenance of infrastructure with special focus on resilience, and financial support for pilot projects for cleaner mobility (Pillar 1) are also mandatory for improving urban mobility systems in the WB6.

Revise land-use and parking regulations to encourage greater transit-oriented development and ensure greater resilience

Reallocation of street space and prioritization of sustainable mobility in infrastructure is key to strengthen green mobility and transit-oriented development in a resilient manner. It is crucial for the further development of transport demand in WB6 cities, to plan in accordance with principles that mitigate the increase of motorized individual transport and, if possible, avoid some of it. For example, restricting large-scale developments where adequate public transport provision is not given. In some cities like Tirana (Bosetti, Chiffi, Pechin, and Uccelli 2020), Pristina (Mott MacDonald 2019), and

Sarajevo, existing former tram or regional rail systems could be used to establish a better mass transit system. They could follow the examples of similar developments in Belgrade and many other Eastern European cities like Warsaw and Prague by building a new system based on its legacy infrastructure. The existing rail networks in many cities, further public transport and shared mobility options, and safe non-motorized transport infrastructure suggest a high potential for a comprehensive sustainable transport network, allowing citizens to not be dependent on private cars.

Introducing and enforcing parking management systems will significantly contribute to modal choice. WB6 cities are witnessing a rampant increase in vehicular traffic that is disproportionally consuming limited road and public space resources. The efficient management of on-street and off-street parking, both in the city center and in newer developments on the city outskirts will contribute to improving operational efficiency for all modes of transport, which is germane for the preservation of livability. Moreover, the enforcement of on-street parking regulations can prevent illegal parking and is a key precondition for advancing the reallocation of street space to greener transport modes. Necessary measures comprise the revision of parking standards for residential and commercial developments (both bike and automobile parking), the creation of regulated parking zones, and the (limited) provision of park and ride options at strategic mobility hubs to reduce inner city traffic.

In cities, integrating land-use and transport planning and investing in safe infrastructure for active, sustainable mobility are key to building greener and more livable communities. The urban populations' mobility needs will not be adequality addressed through investing in mobility systems alone, since a comprehensive and integrated approach is needed to enhance the accessibility of jobs, services and opportunities. Intelligent city planning can help locate key services within reach of the most vulnerable populations, avoiding the need for motorized travel or reducing trip distances, thus improving accessibility of these services, and contributing to more equal opportunities. Shaping WB6 cities toward compactness would reduce the adverse effects on the environment, as well as increase accessibility and thereby inclusion, and, above all, livability (World Bank 2024b). Embracing the idea of the "15-minute city" means offering short walkable distances to places of daily need, such as supermarkets, childcare, and so on, centered around intermodal transit stations. Reducing the need for long, motorized trips and concentrating remaining demand between city centers connected by transit stations can help avoid more carbon-intensive and expensive motorization trajectories. Furthermore, high-density cities are likely to have a lower per capita energy demand than low-density cities, despite being frequently associated with increased demand for energy commodities. Ensuring compact development thus helps maximize the beneficial elements of urban areas (Numanovic, Franic, Bobic and Vukovic 2020).

Land-use-planning and transport infrastructure asset management must consider the increased exposure to natural hazards induced by climate change and aim at reducing the vulnerability of basic urban services and infrastructure. The enforcement of zoning regulations, the implementation of flood controls, and emergency response infrastructure are a relevant part of risk mitigation. However, city planning must also consider natural drainage routes and the possibility of water infiltration as important measures to lower the risks for human settlements and infrastructure.

Invest in active mobility as the greener and most inclusive mode

Many trips made in WB6 cities are suitable for walking and cycling, but WB6 cities must provide a built environment to attract all users to active mobility—this starts with quality walking and biking infrastructure. The majority of the trips in WB6 cities are still made on foot or with public transit (which

starts and ends with walking) and distances are still often suitable for walking and cycling. This is a remarkable green dividend for the region. As a result, WB6 cities are well positioned to avoid a significant shift of trips to more carbon-intensive options such as private cars. Providing the infrastructure to support active mobility could help avoid additional congestion and emissions (of both GHGs and local air pollutants) that will come if no substantive policy action is taken. Sustaining or expanding the modal share for active mobility modes will avoid a significant amount of vehicle kilometers traveled and will allow for more efficient use of limited street space resources. Cities should explicitly dedicate personnel, budget, and other resources to supporting active mobility. Furthermore, the improvements of active mobility should reduce barriers by addressing safety, security (particularly those relevant to women), and health concerns and incorporating digital mobility services. As part of the SUMP process, they should define clear objectives for active mobility mode share and plan supportive infrastructure, particularly around public transit stations. For example, Tirana cites improving the cycling network—both in terms of length and quality of infrastructure—as one of the main strategic goals in the city's SUMP (Bosetti, Chiffi, Pechin, and Uccelli 2020). And Sarajevo plans to foster cycling and e-scooters by implementing new bicycle lanes, parking and establishing a better monitoring and information system for cyclists. Belgrade has tripled the total length of its cycling infrastructure between 2016 and 2020, reaching a network length of 202 km (Belgrade City Administration 2021).

Active mobility is not only efficient and non-polluting, it also can have significant co-benefits for livable cities in terms of road safety, public health, and social inclusion. However, actions must be taken to improve safety for cyclists and pedestrians. Those transport users are most frequently affected by road traffic fatalities and injuries. For example, in Belgrade in 2023, 1,032 traffic crashes involved pedestrians, of which 46 causing fatalities (Ministry of Interior of the Republic of Serbia 2024). Therefore, allocation of street space to prioritize active modes and users of public transit and the provision of safe infrastructure for active mobility can improve welfare and public health. Bikeways and bike sharing facilities (including e-bikes especially suitable for hilly territory) are also to be explored as inclusive options.

Cities in the WB6 may consider the creation of low-emission zones (LEZs) or pedestrian-first streets in public spaces in the city center and in prioritized areas of the city along with supportive investment in safe and inclusive access, as proposed in some of the SUMPs and as is being studied in more detail in the case of Sarajevo. Recent studies analyzing the impact of LEZ implementation in various cities found significant reductions of NOx emissions and black carbon concentrations. PM concentrations were lowered by 5 to 23 percent on average, with the reductions depending strongly on the area covered by the LEZ and on the specific restrictions implemented (Holman, Harrison and Querol 2015) (Ferreira, Gomes, Carvalho, Tente, Monjardino, Bras, Pereira 2012). Furthermore, there are other environmental benefits apart from lowering air pollution, such as shown in the case of Brussels where the implementation of LEZs accelerated the renewal of a highly polluting vehicle fleet (Bruxelles Environnement 2019). The case of Madrid also provides evidence that LEZs can induce modal shift towards more environmentally friendly modes (Tarriño-Ortiz, Gomez, Soria-Lara and Vassallo 2021). Considering these effects, if the most polluting vehicles are to be restricted from traveling in certain areas of the city, WB6 cities should explore options for a gradual implementation of low-emission zones and pedestrian-first schemes.

Improve public transport services and renew public transport vehicle fleets

Modernization of public transport systems is needed to improve accessibility for existing users, particularly the urban poor, and to keep these services competitive with private car ownership and

use. Public transport is one of the most space- and energy-efficient forms of motorized mobility in cities and a big portion of the urban population relies on public transport as their primary mode, particularly the urban poor, women, and vulnerable groups. As an example, in Pristina women rely on walking (47.4 percent) and public transport (27.5 percent) for the vast majority of their trips, using the car for only 5.2 percent of trips—compared to men who use the car for 26.9 percent of trips.[56] Among regular public transport users, the share of women is higher than that of men. For example, 68 percent of regular public transport users in Pristina are women (World Bank 2017a), which is higher than the 60 percent of users in the EU.[57] Therefore, increasing the coverage and capacity of public transport systems should be effectuated by focusing on the convenience and reliability of services for all existing and potential new users. As more and more women start joining the labor force and altering their mobility patterns, it is vital to capitalize on their sustainable habits of walking, biking, and public transport (World Bank 2022).

A relevant share of public transport users in the region (especially women) declare that their primary reason for using this mode is their lack of access to other options. Therefore, it is important to enhance its competitiveness against private motorized transport to avoid losing demand in the future as motorization rates grow. Furthermore, infrastructure and service improvements must be accompanied by campaigns to increase the attractiveness of the local public transport systems. For example, if women stop using public transport in high numbers, lower revenues will lead to worse service, from timeliness to cleanliness to safety, and this will have devastating consequences across the board, including on climate action plans. It makes sense that factoring gender into urban transport is a necessary step on the road to decarbonization.

It is critical that public transport services—both formal and informal—have priority in flowing traffic. Operational benefits are necessary to boost the service and make it competitive and attractive to users. Important measures comprise priority for public transport at crossroads, preferential traffic light control, and road space allocation for dedicated bus lanes. Investing in public transport infrastructure and services can help avoid unnecessary motorization and its externalities in terms of congestion, air pollution, and road safety. Focusing on investing in road capacity expansion will not solve the congestion, travel time delays and air quality investments.

When investments in public transport services are accompanied by improvements to the business model for public transport supply and fleet renewal, even greater gains can be made in terms of air quality. This includes vehicles operating within "informal" public transport services. As an example, Belgrade is testing 10 e-buses (Sustainable-bus.com. 2021) and Pristina, in addition to modernizing its fleet with clean diesel buses, is initiating the purchase of a first batch of e-buses (bne Intelli 2021). Furthermore, revisiting business models to find improved models that can ensure better quality and environmental performance, while creating a better enabling environment for the financial investments from the private sector is critical, especially in the context of the financial stress that public transport operators were subjected to as a result of the COVID-19 crisis. Renovating bus fleets to improved environmental standards will play a critical role in improving accessibility and putting WB6 cities on the path to low-carbon transport systems. This is particularly important as obsolete bus fleets are a source of local air pollution, along with private passenger cars and trucks. Updating trams and trolleybuses fleets to improved standards is also relevant to keep the public transport network functioning and attractive for users.

[56] World Bank elaborated number based on 2017. *Household Travel Survey for Sustainable Urban Mobility Plan for Pristina* (internal document).

[57] World Bank calculations based on Eurostat 2015 and European Commission 2014a

Public transport investments generate significant economic returns (American Public Transportation Association 2020). In cities in the EU, the sector contributes 130–150 billion euros to GDP each year, directly employs 1.2 million people, and creates the conditions for 2–2.5 million more jobs (Flausch 2014). In WB6 countries, jobs in the public transport industry are likely vastly undercounted due to the large number of jobs supporting the informal sector for which data is lacking. Therefore, dedicated analysis on the number, type, and quality of jobs supported by both formal and informal public transport and the identification of ways to address existing gender inequalities in the sector's employment could be an important opportunity for synergy between efficient access and green economic growth.

Integrate smart mobility systems

Smart mobility systems enable efficient management of transport systems and can help collect and consolidate data to inform planning and investment prioritization. ITS apply information and communication technologies (ICT) to the transport sector, with the goal of making mobility safer, more efficient and more service-orientated (European Commission 2021c). Making use of the advancing digitalization ITS allow the collection and processing of data, allowing planners and decision makers to get a more comprehensive insight into traffic flows and their characteristics. Such systems include traffic management and information systems, digital road asset management systems, vehicle control systems and advanced public transport systems. These systems allow real time data collection and can thus provide planners, decision-makers, but also users with information on current traffic conditions and additional information. For example, public transport providers could use ITS to timely inform users on delays, available capacity in busses or trains or ticketing and fares (Geospatial World 2021). Improved knowledge on traffic flows and users' preference can, in a next step, support planning and investment prioritization. Special attention must be given to the inclusiveness of data collection and aim of ITS, providing a broad picture on all users (e.g., how to address non-digital natives), especially when gradually introducing artificial intelligence in a future.

While there is some progress in the use of smart mobility in WB6 cities, its rollout is still significantly lagging. Smart mobility technologies and system penetration in WB6 cities are incipient, but there is still significant progress needed to update traffic management systems, road asset management, user information systems, and parking management technology, among others. Most SUMPs in WB6 cities make reference to the importance of integrating smart mobility systems. For example, the deployment of ITS is mentioned in Tirana's SUMP and includes an upgrade of the city's urban traffic control centre, with the goal of allowing better traffic predictions and the completion of the green wave[58] concept. Moreover, the extension of the info-mobility application for smartphone users and the capacity to monitor road safety and air quality data through better equipment and data collection are core elements of the SUMP (Bosetti, Chiffi, Pechin, and Uccelli 2020). On the other hand, the Belgrade SUMP lists the development of platforms for traffic data collection, followed by innovation of transport models and existing databases (Belgrade City Administration. 2021). The realization of these and similar measures in WB6 cities is likely to improve transport system users' experience significantly.

In addition to personal mobility, freight mobility needs to be managed and more sustainable. As freight transport is growing, there is a need for environmentally friendly systems to distribute freight

[58] The purposefully designed timing of a series of traffic lights to allow smoother traffic flows.

within cities. ITS can contribute to more resource- and cost-effective freight traffic flows within cities. Facilitating the development of intermodal hubs would allow an easier transfer to more sustainable modes such as light-duty electric vehicles and cargo bikes and the management of distribution. Service-orientated mobility systems should be implemented in a manner which encourages intermodal transport development so as to use available modes most efficiently, whilst reducing air pollution and number of trips in cities. The harmonization of requirements for freight transport information in electronic form would contribute to more efficient logistic chains and automatized exchange between transport operators (Transport Community 2021), especially for the last- and first mile, which is extremely important in the urban context.

Improve municipal financing and leverage private sector participation in urban mobility (World Bank Group 2024a)

City governments need to develop robust municipal financing to invest in and sustain the urban transport systems. As most urban mobility infrastructure and services are public goods, municipal governments should seek opportunities to secure sustainable financing, either through direct investment or operational subsidies, and make efforts to attract additional investment and raise additional funding for the sector. The governments should consider capturing a portion of the land value increase as a source of financing for public transport improvements. This can be achieved through increased property tax assessments, business improvement districts, and public-private partnerships (PPPs) for nearby developments. Central government also plays a pivotal role in catalyzing local investments through grant schemes to incentivize innovations. Well-designed central government programs, such as grants or viability gap financing, can serve as important financing sources to encourage local investment in public transport.

While the private sector is already playing a role in urban mobility in the Western Balkans, more can be done to expand its participation in infrastructure, services, and emerging transport modes. Attracting private sector funding can complement the own cities' efforts to address the challenges of delivering and financing urban mobility projects. Cities can further leverage the efficiency of the private sector through PPPs. While private sector involvement in urban mobility is currently limited, PPPs in urban mobility can take different forms and be developed in areas such as parking management, ticketing and information systems, bus terminals, shared services and micromobility,[59] and mass transit and urban buses. At the national level, establishing an adequate regulatory framework is key to attracting PPPs for mobility projects. Achieving this will require establishing adequate national regulatory frameworks. PPPs could take different forms (e.g., Build-Operate-Transfer, concession agreements, or joint ventures) and cover multiple areas, including parking management, ticketing and information systems, construction and operation of bus shelters and terminals, shared services and micro-mobility, and urban bus systems. Ensuring a successful and effective application of PPPs requires the structuring of high-quality concessions, which in turns needs technical, institutional, regulatory and fiscal capacities.

An option to be explored could be to move to a concession model for bus operations, and, even more ambitious, creating a standardized open regional market for bus concessions, which could be a key enabler for improving both quality and environmental performance of urban bus transport services in the region. Studies indicate that while e-buses are already competitive with their diesel

[59] Micromobility refers to transportation over short distances provided by lightweight, usually single-person vehicles, such as bicycles and scooters (https://www.merriam-webster.com).

counterparts in terms of Total Cost of Ownership (TCO), their capital cost is significantly higher. Moving to a concession model, where the city pays for the service provided (e.g., bus-km) rather than for the capital cost of buses, would change the financial implications of the e-mobility transition for a city. Standardizing bus concessions to make them bankable; allocating risks between government and concessionaire efficiently and appropriately; and ensuring that concessions are truly competitive and open (avoiding incumbent capture) would in itself yield benefits for cities and facilitate transitions to cleaner, greener fleets. Moreover, if cities can coalesce around a standardized Western Balkans concession it would have the added benefits of creating a regional market, which would in turn increase bankability giving operators and their financiers alike confidence of a secondary market for buses bought to support a concession.

Barriers and Opportunities

There is recognition of the importance of urban areas as engines of economic growth for the Western Balkans, however WB6 countries must improve the enabling environment to accelerate bolder action for sustainable urban development. Advancing Pillar 3 activities is still significantly lagging compared to the actual needs of the WB6. Local governments struggle to deliver urban mobility infrastructure and services at a rate that is commensurate with their needs due to reasons including unsuitable fiscal architecture, limited technical and administrative capacities and a general absence of national government funding and technical support. When a SUMP exists, they are often delays with operationalization and timely financing. Important drivers such as the increased congestion in cities, air quality challenges and the loss of livability present opportunities for accelerated momentum for this agenda. It is important that national governments with support from the development partners place a greater emphasis in creating the enabling environment for a more ambitious fiscal and technical capacity for local governments to deliver people centered urban mobility. This starts with the recognition of the urban agenda as an agenda of national significance, coupled with building capacity at the local level to deliver their budgets, and to set the stage for the absorption of increased forthcoming funds from EU and other development partners. Establishing National Urban Mobility Policies combined with acceleration of local funding would enable local improvements such as public transport and integrated land-use and transport planning. Improving the national funding and the technical capacity and capability of line ministries in charge of urban development/mobility is also germane, as the agenda can be significantly accelerated if the national government initially supports it. Creating a better enabling environment for private participation in public transport and e-mobility rollout would accelerate the scale up the impact of public investment.

Summary and Contributions to GRID

Urban transport is an essential system that supports access and connectivity to social and economic opportunities but, if not properly managed, may entail significant negative impacts on the environmental, economic, and social fronts. Transport systems are critical for developing livable cities, for attraction of investment, for boosting the prosperity of urban populations, and for cities' air quality. Creating livable cities by providing safe and convenient alternatives to the private car and managing motorization is a critical way to advance GRID (see Table 10):

a. **Green:** Maintaining and encouraging high modal split for public transport, cycling, and walking has a significant impact on greening transport. With increasing motorization rates in all cities, efforts

need to be undertaken to strengthen the attractiveness of lower carbon-intensive modes. While public transport mode shares are currently fairly robust—between 28 percent to 50 percent—the COVID-19 pandemic and deteriorating service quality threatens to reduce these shares. Therefore, investment in active mobility infrastructure, renewal of bus fleets, and dedicated street space for the fast and reliable flow of public transport vehicles will be critical for maintaining and improving usage of efficient, low-carbon urban modes.

b. **Resilient:** The resilience of urban transport relies on intelligent city planning, better managing development on "green land", and a comprehensive multimodal transport system that prioritizes sustainable modes. In addition to adaptation measures for physical infrastructure, smart mobility platforms can provide an additional level of resilience, allowing for real-time monitoring of conditions and hazards and providing early warning in case of instabilities and emergencies.

c. **Inclusive:** Public transport and active mobility are affordable transport options for everyone and shall be considered as truly people centered investments. Access can be further enhanced by applying standards and principles for inclusive system development that consider the needs of all users. In particular, last-mile services allow direct mobility from origin to destination and can be adapted according to local needs.

d. **Economic Development:** Cities in the WB6, particularly the capitals, contribute a significant share of the region's GDP, with urban mobility systems supporting diverse jobs and economic activities. Addressing congestion through greater diversity and efficiency of transport services could support even greater productivity and wealth generation in WB6 cities. The transport sector does not only enable access to jobs and social and economic opportunities; it is also a significant employer in the provision of both passenger and urban freight transport.

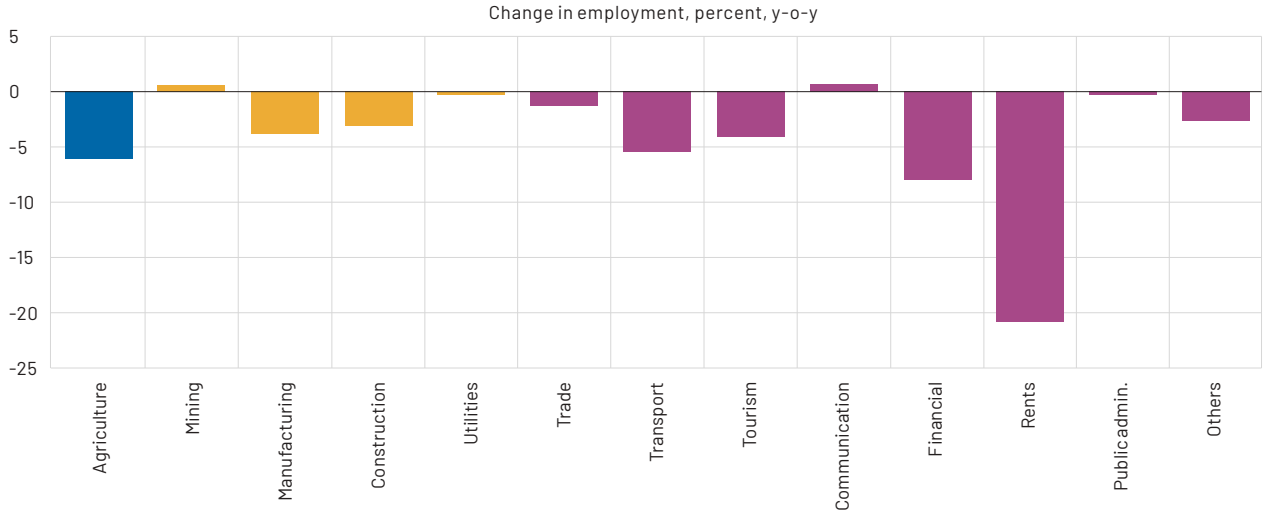
Table 10. Strategic actions for urban mobility

Action	Implementation timeline	G	R	I	D
Revise land-use and parking regulations to encourage greater transport-orientated development and ensure greater resilience	Medium-term	••	•	••	•
Invest in active mobility as the greener and most inclusive modes	Short-term	••	•	••	
Improve public transport services and renewal of public transport vehicle fleets	Short-term	••		••	•
Integrate smart mobility systems	Medium-term	••		•	•
Improve municipal financing and leverage private sector participation in urban mobility	Medium-term	••	•	•	••

Note: short-term (1–2 years); medium-term (3–5 years).
• moderate contribution; •• strong contribution to dimension of GRID.

Annex 1. Envisioning a Transport Sector that Contributes to GRID

Figure 31. Job losses by economic sector due to COVID-19



Source: World Bank 2021b

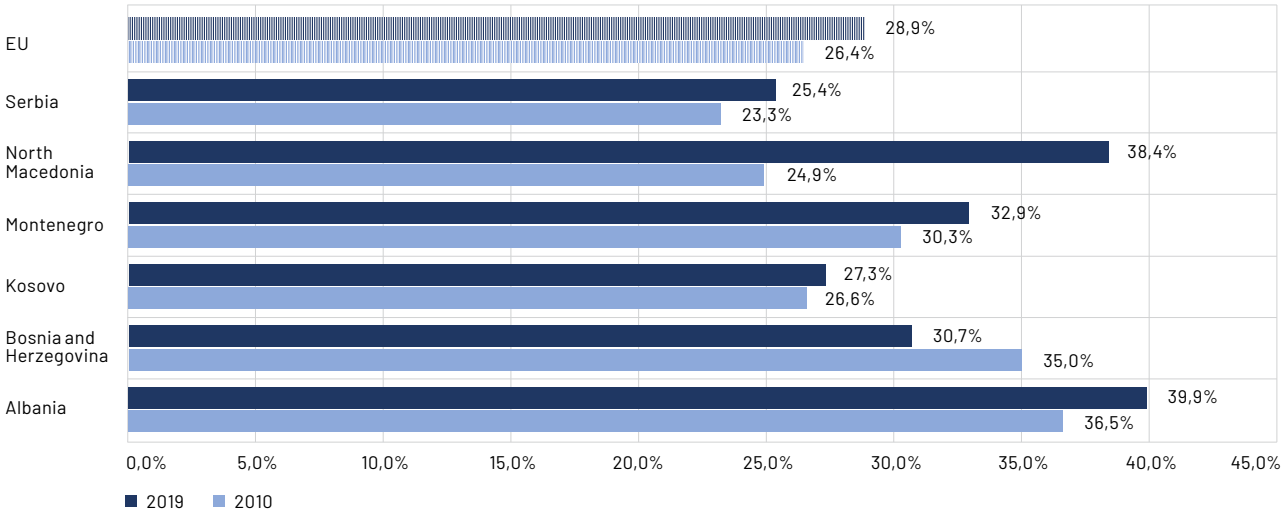
Table 11. Road safety indicators for the six Western Balkan countries, 2010 and 2019

Country	Annual number of road traffic fatalities		Road traffic fatalities per thousand passenger cars		
	2010	2019	2010	2019	% change (2010–2019)
Albania	352	227	1.19	0.45	-62%
Bosnia and Herzegovina	355	261	0.49	0.28	-43%
Kosovo	175	113	0.88	0.39	-56%
Montenegro	95	47	0.58	0.22	-63%
North Macedonia	162	132	0.52	0.31	-41%
Serbia	660	534	0.42	0.26	-39%
European Union (EU27)	29,576	22,755	0.14	0.09	-34%

Source: World Bank elaboration based on Eurostat 2023a and Eurostat 2023b.
Note: Whereas road safety is frequently referred to with the figure of road traffic fatalities per inhabitants (public risk), it is more stable to compare traffic risks, meaning the number of fatalities per thousand vehicles.

Annex 2. Pillar 1

Figure 32. Share of transport in the final energy consumption in the WB6 and EU, 2019



Source: IEA 2019

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Policy Note

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