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LIST OF ABBREVIATIONS

ADR	Agreement concerning the International Carriage of Dangerous Goods by Road
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ALB	Albania
BCP	Border crossing point
BIH	Bosnia and Herzegovina
CCP	Common crossing point
CCTV	Closed-circuit television
CEF	Connecting Europe Facility
CEFTA	Central European Free Trade Agreement
CNG	Compressed natural gas
CO2	Carbon dioxide
COTIF	The Convention concerning International Carriage by Rail
CRM	Common Regional Market
DATEX	Electronic language used in Europe for the exchange of traffic information and traffic data
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ECMT	Entrepreneurship and Communication in Multicultural Teams. Erasmus+ strategic partnership project
EFTA	European Free Trade Association
ERDF	European Regional Development Fund
ERTMS	The European Railway Traffic Management System
EU	European Union
EUSAIR	EU Strategy for the Adriatic and Ionian Region
EV	Electric Vehicle
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GHG	Greenhouse gases
HS	High speed
ICT	Information and Communication Technology
IFI	International Financial Institutions
IM	Infrastructure Manager
IPA	Instrument for Pre-Accession
ITS	Intelligent Transport Systems
IWW	Inland Waterway
KOS	Kosovo ^{*1}
L-CNG	Liquefied compressed natural gas
LPG	Liquefied petroleum gas
MaaS	Mobility as a Service
MoS	Motorways of the Sea
MKD	North Macedonia

1 (*) This designation is without prejudice to positions on status and is in line with UNSCR 1244 (1999) and the ICJ Opinion on the Kosovo declaration of independence.



NCTS	National Common Transit System
NSW	National Single Window
OEM	Orient East Med Corridor
PCS	Port Community System
PHEV	Plug In Hybrid Electric Vehicle
PSO	Public Service Contract
R&D	Research and Development
R&I	Research and Innovation
RAMS	Road Asset Management System
RCC	Regional Cooperation Council
RED	Renewable Energy Directive
RES-T	Renewable energy resources in transport
RID	Regulation concerning the International Carriage of Dangerous Goods by Rail (RID), Appendix C to the COTIF Convention
RIS	River Information Services
Regional Parties	Defined under Treaty as Albania, Bosnia and Herzegovina, North Macedonia, Kosovo, Montenegro, Serbia
RU	Railways Undertaking
SAGOV	South Adriatic Connectivity Governance
SEE	South-East Europe
SEED	System for Electronic exchange of Data
SEETO	South-East European Transport Observatory
SUMP	Sustainable Urban Mobility Plan
SUPAIR	Sustainable Ports in the Adriatic-Ionian Region
TAIEX	Technical Assistance and Information Exchange Instrument
TAP-TAF TSI	Technical Specification for Interoperability relating to Telematics Applications for Freight/Passenger Services
TC	Transport Community
TCT	Transport Community Treaty
TEN-T	Trans-European Transport Network
TWINNING	EU instrument for institutional cooperation between Public Administrations of EU Member States and of beneficiary or partner countries.
SER	Serbia
UVAR	Urban Vehicle Access Regulation
VAT	Values Added Tax
VTMIS	Vessel Traffic Monitoring & Information System
WBIF	Western Balkans Investment Forum
Western Balkans	Albania, Bosnia and Herzegovina, North Macedonia, Kosovo, Montenegro, Serbia
WHO	World Health Organisation

1.

EXECUTIVE SUMMARY



The **Western Balkans** region is affected by the changing climate and has already seen **severe consequences of climate change**. The region is one of the most affected by climate change in Europe with **estimated temperature increases of 1.7 – 4.0°C**, and even predicted to exceed 5.0°C by the end of this century², depending on the global effort in greenhouse gases emissions reduction³.

Transport has been recognised in many political initiatives (European Commission's Connectivity Agenda), as one of the key factors that contribute to regional connectivity, economic prosperity, and peace. Nevertheless, **it has negative effects such as greenhouse gases emissions, air and water pollution, accidents and motor vehicle collisions, congestion, noise, biodiversity loss and, it affects health and wellbeing** in the region in disproportionately higher numbers than in the EU.

Main sources of greenhouse gases emissions in the region are the **energy and transport sectors**, encompassing two thirds of overall share. The transport⁴ sector represented **12 per cent share** of these **emissions in 1990** and its share increased to **16 per cent in 2018**⁵. Emission levels caused by transport, tourism, as well as other economic sectors in the Western Balkans and in the European Union (EU) are increasing and have become more challenging to tackle.

The five major contributors to emissions in the transport sector are: Road Transportation, Railways, Aviation, Maritime, and Inland Waterway transport. **The overall share of transport emissions is dominated by the share of CO₂ emissions from road transport (above 90 per cent in the Regional Parties⁶). This is most evident** in larger urban areas in the region, which suffer from extremely high pollution⁷. With regards to air quality, pollutant concentrations are often above the yearly average, and daily and hourly maximum limits.⁸

Due to the ongoing COVID-19 pandemic, these challenges are even more magnified. The pandemic has caused a decline of the national economies in the region, in particular GDP rate unemployment rates⁹. It has also brought to the forefront the importance of high level of market integration and the interdependence between EU and the Western Balkans. The Green lanes have shown the benefits of regional coordination between the region and EU.

The COVID-19 pandemic has also led to substantial operational and financial difficulties of transport/logistics operators, influenced transport workers' rights and employment, and has caused long wait time on external border-crossings with the EU. Hence, the post-pandemic recovery should consider the premises for a smart, green, safe, and affordable transport system for the future similar to the system in

2 Compared to the baseline period of 1986-2005

3 Vuković, A. and Vujadinović Mandić, M., "Study on Climate change in the Western Balkans", 2018

4 Includes road transport, non-road transport, domestic aviation, and inland waterways for each country.

5 Banja M., Đukanović G., Belis C.A., "Status of air pollutants and greenhouse gases in the Western Balkans: Benchmarking the accession process progress on environment", 2020

6 Defined under Transport Community Treaty as Albania, Bosnia and Herzegovina, North Macedonia, Kosovo*, Montenegro, Serbia. * This designation is without prejudice to positions on status and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

7 Transport Community Permanent Secretariat, "GAP Analysis - STRATEGY FOR SUSTAINABLE AND SMART MOBILITY IN THE WESTERN BALKANS", 2021

8 UN environment, "Air Pollution and Human Health: The Case of the Western Balkans", 2019

9 Transport Community Permanent Secretariat, "GAP Analysis - STRATEGY FOR SUSTAINABLE AND SMART MOBILITY IN THE WESTERN BALKANS", 2021



the EU which strives towards a fundamental transport transformation to become more resilient to future crises. **The supply chain disruptions from one side and reductions in passenger travel from the other has exposed the vulnerabilities of the transport system**, especially in international movements.

Making transport cleaner and sustainable has become one of the significant drivers of transport policy in European Union and in the Western Balkans Region. The goals to achieve green and sustainable transport is on top of the political agenda. This has also been highlighted in several key documents adopted at the highest political level: the Economic and Investment Plan for the Western Balkans, the European Green Deal, the Green Agenda for the Western Balkans, the EU Sustainable and Smart Mobility Strategy etc. to build upon pre-existent efforts for a more resilient and inclusive Europe.

The purpose of developing the Transport Community Permanent Secretariat's (TCPS) **Sustainable and Smart Mobility Strategy for the Western Balkans** is to mirror the European Union's Sustainable and Smart Mobility Strategy and to adjust goals, milestones, and actions of the EU to the realities in the Western Balkans region, and to also provide the region with a roadmap for the decarbonisation and digitalisation of its transport sector. However, to do that, first step was to conduct a gap analysis and determine the Western Balkans' current circumstances in relation to 10 EU flagships, and the three objectives for mobility to be:

- (i) Sustainable,
- (ii) Smart and
- (iii) Resilient.

MAIN FINDINGS

(i) Sustainable mobility

The region is lagging in achieving objectives set in the European Green Deal, the Green Agenda and the Paris Agreement. **In all the Regional Parties oil and petroleum products are the dominant type of fuel.** The transport sector in the region is based on oil derivatives (petrol, diesel fuel, and liquefied petroleum gas – LPG) for road traffic, electricity, and diesel for rail traffic. Road transport is the predominant mode of transportation but **the uptake of electrical and hybrid road vehicles in the Western Balkans is low, counting less than 1 per cent¹⁰**, compared to the EU's share of electrical vehicles registered until 2019 (2.88 per cent¹¹.) There has been a steady increase in the interest in road vehicles using a combination of traditional fuels (diesel and gasoline) with electricity fuelled cars, CNG etc. counting for over 15 per cent¹² of the road vehicles fleet **Regarding rail, as there is no infrastructure nor vehicles capable of using other type of energy, zero-emission vehicle rely on electric traction. There are no zero emission vessels used in inland waterways, maritime and air transport.**

One of the main causes for the low appeal of cleaner vehicles/vessels is the limitation of the appropriate alternative fuels supply like refuelling/recharging networks. E-charging stations on the road network are mainly concentrated in the urban areas. The alternative fuels infrastructure in both inland waterways

10 Statistical offices of Regional Parties

11 Source: <https://www.acea.be/statistics/tag/category/share-of-alternative-fuel-vehicles-per-vehicle-segment>

12 Statistical offices of Regional Parties



core network ports (Brcko, Samac, Novi Sad, Belgrade) and maritime core network ports (Bar, Durres) is currently non-existent. The situation appears more promising as the rail **electrification compliance** of the operational network is already on **1,807 km (73 per cent) on the Core and 54 per cent or 2,002 km of the Comprehensive Network**. However, there are still issues related to the usage of diesel locomotives on electrified sections due to lack of the electric locomotives Railway Undertakings. **As for the availability of alternative fuels in Comprehensive/Core airports, none of the airports currently has the infrastructure for sustainable aviation fuels**, although some of them (Belgrade, Nis, Kraljevo) do use renewable energy sources either for running the airport or for ground handling.

Under the Ambient Air Quality Directives, EU Member States have to comply with air quality standards for a number of pollutants harmful for human health, including limit values for nitrogen dioxide and particulate matter (PM₁₀ and PM_{2.5}). As EU aspirants, Regional Parties will need to comply with the same standards.

Implementation of energy efficiency measures in the transport sector is still at its inception. There is a lack of a unified approach on setting the emissions standard by respective authorities in the Western Balkans, it ranges from EURO 3 as the lowest to EURO 6. There is a clear distinction between used and new vehicles, with higher/better emissions standards set for new imported vehicles.

Urbanisation has increased in the past decades and this trend is likely to continue. Interurban passenger transport needs to be more developed to decrease heavy reliance on road transport. Green Mobility has become an urban and interurban issue and affects not only people living in cities but those travelling often to or through them. **In over 25 cities located in the Regional Parties, limit values for one or more of these pollutants have been exceeded for many years**, with significant consequences for public health and the economy¹³. Transport remains one of the key contributors to air pollution. The number of kilometres of road dedicated exclusively to public transit per 100 000 population and the number of kilometres of bicycle path per 100 000 population is very low in the cities of the region (e.g., Tirana, Skopje, Sarajevo¹⁴). Public transport and alternative options such as cycling, walking and micromobility are not sufficiently developed or promoted.

Passenger modal split¹⁵ in the region is far behind the EU-28 average and there several influencing factors: non-compliance with TEN-T standards, significant maintenance gap, lower operational speed versus the designated speed, uncompetitive railway companies in comparison to other modes. In comparison to other road and air passenger transport modes, rail has shown more resilience during the COVID-19 period, due to a limited number of players and a more controlled system. To decarbonise transport, improvement of the rail system will be crucial.

Currently, freight transport in the region is dominated by road transport, while the development of multimodal transport is in its early stages of preparation. Multimodality takes advantage of the strengths of the different modes, such as convenience, speed, cost, reliability, predictability, and in combination, can offer more efficient transport solutions for people and goods which will help ease the pressure on the

13 Banja M., Đukanović G., Belis C.A., "Status of air pollutants and greenhouse gases in the Western Balkans: Benchmarking the accession process progress on environment", 2020

14 EBRD, Green cities action plan for Tirana, Skopje, Sarajevo

15 Eurostat, "Statistical Pocketbook 2020, EU Transport in Figures", 2020.



Western Balkans' congested transport infrastructure, and make the whole sector more environmentally friendly, safer, and cost effective. **The region has not yet started developing its policy, institutions, legal and regulatory framework in multimodality.**

To improve multimodality, the infrastructure conditions of the rail and inland waterway network needs to be improved. Currently the operating speed of 100 km/h and higher is available only on 471 km, or 19 per cent of the Core and 12 per cent of the Comprehensive network.

Safeguarding inland waterway navigability throughout the year is one of the key factors for improving it. **Currently, the Sava River waterway does not meet the required navigation parameters of international waterway class IV in all sections and does not allow for smooth navigation on 300 days/year for vessels with a maximum draft of 2.5 metres. Regarding the waterborne fleet, many vessels currently operating on the European waterways, including the Western Balkans, were built more than 30 years ago.**

Transport activities produce negative externalities to the environment and to society. The Western Balkans rely heavily on road transport and as such, it is expected that a considerable portion of taxes/revenues are collected from road transport (mainly passenger cars). Road freight traffic is also a high cause of pollution, particularly with an ageing fleet, exacerbating the already high air pollution levels in the region and causing a real concern for road safety, particularly when heavy vehicles use secondary and tertiary parts of the network. **The externalities of road traffic, such as overloading and pollution, are not fully accounted for in current road user charging mechanisms.**

Currently, neither individuals planning a trip, nor shippers/logistics operators organising a delivery have easily accessible information that could help them make sustainable and green choices when planning their trips.

(ii) Smart mobility

Digitalisation, automation, and, the emergence of shared, collaborative economy and platforms, which are challenging the current and traditional mobility and transport landscape, will be crucial for building a smart, green and resilient transportation system. New ICT technologies, including artificial intelligence (AI), impact the way transport organisations operate. They pave the way for innovation, allow new services and business models to enter the market and challenge the incumbents. **When looking at digitalisation of the transport system, we can refer to the deployment of intelligent transport systems, introduction of smart digital solutions related to passengers and digitalisation and paperless supply chains.**

Digitalisation of transport is taking a slower pace. The trend of the development of ITS in the Western Balkans has been characterised by great interest and the proliferation of standalone ITS projects. The deployment of ITS is uncoordinated on a regional level and within each Regional Party. ITS are developed separately for every mode, with frontrunners being road and inland, and maritime transport, usually with insufficient collaboration and coordination.

However, smart solutions related to improving the mobility of final consumers and improving logistics operations still need to be developed on a regional level. A lot more work still needs to



be done to achieve interoperable solutions, which can be combined and integrated smoothly along travel/supply chains. **Currently, road and rail travellers are mostly not able to plan and book their trips online**, in some cases, domestically or internationally.

Bottlenecks at borders or excessive government bureaucracy marked by paper trail are significant to why the regions trade is below its potential and is what is holding back their economies. A one-day delay reduces the export value of most goods by 1 per cent, for agricultural products. This is critical for the Western Balkans, where it can be reduced by 7 per cent. The unpredictability at border crossings, lack of coordination along the supply chain, delays in information exchange and need for paper trails contribute to high logistics costs estimated at 16 per cent of GDP, compared to about 8 per cent in the EU and the US. In the region, digital multimodal solutions have been developed mostly as pilot projects implemented on parts of the network in one Regional Party, such as the logistics performance platform along the Durres-Tirana corridor.¹⁶

The transition towards smart mobility, which is more efficient, user-friendly and sustainable can only happen if the right digital enablers are in place. Transposing and implementing proper legislative frameworks, facilitating the process of implementation of new technologies in addition to creating opportunities for the private sector to invest, will be one of the main challenges for the region to improve innovation.

(iii) Resilient mobility

A single market still needs to be developed in the Western Balkans, and several regional organisations have put different initiatives in place to achieve that. To make the twin transition to sustainable and smart mobility in transport truly successful and to make the whole system more resilient, in addition to specific measures to increase the sector's crisis resilience, there is a need to boost investment, upgrade EU transport infrastructure and modernise fleets, while deepening the Single Market, removing non-physical barriers and providing fair social conditions for workers and making mobility just and fair for users. All while ensuring that safety and security remain paramount.

Single market challenges are usually related to the reformation of the transport system and non-physical barriers, which would contribute to seamless flow and produce the same benefits as hard infrastructure projects:

The insufficient cooperation, coordination, and resources at the border crossing points in terms of both hard and soft infrastructure, management, equipment, and monitoring are significant obstacles affecting the overall connectivity in the region, and with the EU Member States neighbouring it. The average waiting time on some WB6-EU border crossing points exceed two hours, and in some cases, up to four hours of waiting time have been reported.

Restructuring railway companies and making them more competitive has been a focus of the regional policy for more than a decade. Despite efforts put in place, persistent issues still need to be addressed further, such as opening the market at a national level aligned with EU acquis, and establishing/sufficiently staffing/educating institutions (regulatory body, licensing body, national safety authority, national investigation body, designated body), etc.



Improving the quality of the infrastructure remains one of the most important conditions for improving mobility, connectivity, and economic activity of the Western Balkans region. Almost € 11 billion has been invested since 2007 to develop the Indicative Extension of TEN-T Core and Comprehensive Network, however the infrastructure is still not fully connected and interoperable nor equipped with the sustainable and smart solutions needed to allow climate-neutral mobility.

As for the condition of the core rail network, 30 per cent is in very good and good conditions, where approximately 70 per cent-100 per cent of designated speed can be achieved. The largest part of the core network is in poor and very poor condition (1,083 km), with larger variations in the maximum allowed speed. Approximately, 26 per cent of the section is in medium condition.

Investments in road infrastructure count for the biggest share of transport infrastructure, therefore road sections in good and medium conditions prevail (about 72 per cent), while a mere 6.4 per cent of the overall Core/Comprehensive Network can be regarded as “non-maintainable roads” (being in poor and very poor conditions). The annual road budget for rehabilitation and maintenance is very low, and about € 380 million is urgently needed to fix the main roads in the worst conditions.

As for Inland Waterways, neither the Danube nor the Sava are fully compliant with TEN-T and there are significant factors influencing the navigability and competitiveness of inland waterways. The Danube River is not compliant with minimum draught TENT standards on the IWW link between Bezdan and Novi Sad. Although approximately 95 per cent of the Sava River is currently compliant in terms of ECMT Class, however (with regards to minimum draught) it has been noted that only 13 per cent of the Corridor (81 km between Belgrade and Vrbica - Plandiste area in Serbia) is compliant with the respective TEN-T standards.

All inland and maritime ports included in the Core Network are compliant with the TEN-T standard, regarding existing rail connections. **None of the inland and maritime ports in the Western Balkans currently comply with the standards of the availability of alternative clean fuels.**

The Western Balkans have been shown to be vulnerable to extreme weather events, particularly: i) Landslides and unstable slopes along highways, main roads and railways; ii) transport infrastructure in the vicinity of river flows which can be affected by floods; iii) Rising groundwater levels; iv) Floods in spring and summer and snowdrifts in winter periods.

The transport sector is a major contributor to the Western Balkans economies, supporting jobs and being a key driver of connectivity in the region. The sector represented **around 5 per cent of the Western Balkans workforce in 2018¹⁷**. Women participation in the transport sector in the region ranges from **1 – 1.5 per cent of the total employed in this sector.**

Workers in the transport sector in the Western Balkans face several challenges when it comes to social rules and its application. Employees in the transport sector need **job security, good social standards, and attractive and fair employment conditions.** This means improving staff safety, attracting new staff, managing the ageing work force, and recruiting young people.

17 Source: International Labour Organisation, 2018



The success of transport largely depends on the availability of a skilled workforce. There is a risk of skills mismatch for certain transport sectors already today. The transport sector often suffers from a negative image in terms of harsh working conditions (atypical hours, and long periods away from home), which may discourage especially younger people, from seeking jobs in the transport sector. This lack of attractiveness has led to a need to make the transport sector more appealing to the young and to women.

Safety and security are of primary concern for any transport system. Travellers expect transportation to be safe.

In 2020, the Western Balkans region had 1,171 road traffic deaths (625 fewer than a decade before). Every year slightly fewer deaths were reported resulting in a gradual reduction of fatalities compared to the baseline year of 2010. However, the Western Balkans' rate for 2020 is 64 people killed on roads per 1 million inhabitants which is high in comparison with the EU27 rate which is 42 killed on roads per 1 million inhabitants.

One of the most sensitive reservations of rail safety is safety on level crossings. The **current situation shows that majority of the level crossings do not have proper protection.** Most fatalities in rail transport are not directly or indirectly concerned with rail traffic and transport. Most deaths are a result of unauthorised presence or from level crossing accidents, therefore safety at level crossings need to be improved and the public need to be made more aware regarding the safety risks related to railway traffic.

Regarding the **transport of dangerous goods, application and accession to the international agreements is uneven in the Western Balkans and implementation of the EU Acquis is still lagging.** Further investments are needed in this sector in the Western Balkans to close the gap in terms of adaptation to technical and scientific progress.

KEY CONCLUSIONS

Gap analysis has shown that while the region is advancing in some aspects of sustainable and smart mobility such as the refocus on improving railway infrastructure, in many others, such as the deployment of alternative fuel infrastructure, clean vehicles, and faster digitalisation and innovation, significant progress is still behind.

Making the transition toward a green and digital society will require strong prioritisation by the Regional Parties, in addition to a change in focus from only infrastructure improvements. Additionally, reducing the gap will also involve a strong financial component as well as human capacity strengthening.

TCPS together with the Regional Parties has developed the Sustainable and Smart Mobility Strategy for the Western Balkans which aims to provide the region with a roadmap for decarbonisation and digitalisation of its transport sector to become more resilient to future crises. The Regional Parties currently lack a common strategy to manage the decarbonisation of transport, while national strategies have only sporadically tackled this issue. Therefore, this Strategy will serve the region to set common objectives and a coordinated approach to making transport greener, sustainable, and healthier for citizens of the Western Balkans and, will assist them to strengthen their National Strategies.



The region should substantially cut transport emissions by 2050 and contribute to the EU goal of climate neutrality, delivered by a smart, competitive, safe, accessible, and affordable transport system.in line with the policy initiatives indicated in the Western Balkans Green Agenda and Economic and Investment Plan for the region

2.

BACKGROUND



Transport and mobility are prevalent in almost all areas of life. They connect the region together, impact the supply of goods and services, used for daily commuting, urban movement and touristic and leisure travel. In many political initiatives, such as the European Commission's Connectivity Agenda transport has been recognised as one of the crucial factors contributing to regional connectivity, economic prosperity, and peace. However, **transport has negative effects such as greenhouse gases emissions, air and water pollution, accidents and motor vehicle collisions, congestion, noise, biodiversity loss and it affects health and wellbeing** in the region in disproportionately higher numbers than in the EU. Air quality, particulate matter (PM₁₀ and PM_{2.5}), SO₂, O₃ and NO₂ concentrations are often above the yearly average and, daily and hourly maximum limits. The excessive values are the highest in winter¹⁸.

EU AND REGIONAL POLICIES

Making transport cleaner and sustainable has become one of the key drivers of transport policy in the European Union and in the Western Balkans Region. Several documents adopted at the highest political level place green and sustainable transport at the top of their lists of priorities: the Economic and Investment Plan for the Western Balkans, the European Green Deal, the Green Agenda for Western Balkans, etc. build upon pre-existent efforts for a more resilient and inclusive Europe.

Climate change and environmental protection are priorities in the European Commission's **White paper**¹⁹ with the overarching goal to decrease Europe's dependence on imported oil and, cut carbon emissions from transport by 60 per cent by 2050. By then, the EU plans to have no more conventionally fuelled cars in cities; 40 per cent use of sustainable low carbon fuels in aviation; (at least) 40 per cent cut in shipping emissions; and a 50 per cent shift of medium distance intercity passenger and freight journeys from road to rail and waterborne transport.

The European Commission's Communication on the **European Green Deal**²⁰ from December 2019 sets even more ambitious goals and aims at 90 per cent reduction in transport-related greenhouse gases emissions by 2050 to support the EU's plan to become the first climate neutral continent. The Green Deal aims to provide more affordable, accessible, healthier, and cleaner transport alternatives and to contribute to mitigating the impact of transport on our natural environment, by (among others) reducing air, water, and noise pollution.

Additionally, the European Commission adopted a comprehensive **Economic and Investment Plan for the Western Balkans**²¹, which aims to spur the long-term economic recovery of the region, support the green and digital transition, foster regional integration and converge with the European Union. It will mobilise up to € 9 billion funding for investment flagships in areas of transport, energy, and green and digital transition, to create sustainable growth and jobs, with special focus on sustainable and green transport.

18 UN environment, "Air Pollution and Human Health: The Case of the Western Balkans", 2019

19 European Commission, White Paper: Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system, COM(2011) 144 final

20 Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: The European Green Deal, COM(2019) 640 final

21 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: An Economic and Investment Plan for the Western Balkans, COM(2020) 641 final



The recently published European Commission's Staff Working Document the **Green agenda for the Western Balkans**²² mirrors the EU Green Deal and presents tailored solutions for bringing the region one step closer to climate neutrality. The Green agenda sets strategic objectives towards a clean transport that is a fit for a green and digital future, with sustainable mobility and greening infrastructure as essential elements. The Western Balkans region is committed to the Green Agenda goals in the Sofia Declaration signed by the Western Balkans leaders in November 2020²³. This Agenda should enable the Western Balkans and the EU to create stronger links between climate and environment actions, policy reforms and EU integration. It should also guide the definition of financial and technical assistance strategies both at bilateral and regional levels.

Additionally, the **EU's Sustainable and Smart Mobility Strategy**²⁴ was published in December 2020. The Strategy builds on the Communication on the European Green Deal, the 2030 Climate Target Plan and the evaluation of the 2011 White Paper 'Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system.

The European Union's Sustainable and Smart Mobility objectives have been very ambitiously set and include following milestones:

By 2030:

- at least 30 million zero-emission vehicles will be in operation on European roads.
- 100 European cities will be climate neutral.
- high-speed rail traffic will double.
- scheduled collective travel of under 500 km will be carbon neutral within the EU.
- automated mobility will be deployed at a large scale.
- zero-emission vessels will become ready for market.

By 2035:

- zero-emission large aircraft will become ready for market.

By 2050:

- nearly all cars, vans, buses as well as new heavy-duty vehicles will be zero-emission.
- rail freight traffic will double.
- high-speed rail traffic will triple.
- the multimodal Trans-European Transport Network (TEN-T) equipped for sustainable and smart transport with high-speed connectivity will be operational for the comprehensive network.

22 Commission Staff Working Document, Guidelines for the Implementation of the Green Agenda for the Western Balkans, Accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: An Economic and Investment Plan for the Western Balkans, SWD(2020) 223 final

23 Source: <https://www.rcc.int/docs/546/sofia-declaration-on-the-green-agenda-for-the-western-balkans-rn>

24 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee of the Regions: Sustainable and Smart Mobility Strategy – putting European transport on track for the future, COM(2020) 789 final



STAKEHOLDERS INCLUDED IN DECARBONISATION OF TRANSPORT

European Commission

The European Commission is the EU's politically independent executive arm. It proposes and implements laws which are in keeping with the objectives of the EU treaties, implements the decisions of the European Parliament and the Council of the EU. It plays an active role in developing the EU's overall strategy and in designing and implementing its policies. With the Green Deal, the European Sustainable and Smart Mobility Strategy and Green agenda are directing decarbonisation efforts in the transport system²⁵.

Transport Community Treaty Organisation

The Transport Community is an international organisation in the field of mobility and transport, consisting of 33 participants – the EU and the six Western Balkans Regional Parties (Albania, Bosnia and Herzegovina, North Macedonia, Kosovo, Montenegro, Serbia). The organisation was founded by the Treaty establishing the Transport Community signed on 9 October 2017 by all partners (Council Decision (EU) 2019/392).

The Transport Community focuses on the progressive integration of transport markets of the Regional Parties into the EU transport market based on the relevant acquis, including areas of technical standards, interoperability, safety, security, traffic management, social policy, public procurement, and environment as well as the development of TEN-T network. Making transport sustainable and smart requires actions throughout all modes of transport, encompassing legislative and infrastructure changes. The Transport Community with its regional reach, is in the best position to provide green, sustainable, and smart mobility strategic objectives to the Western Balkans region and to help the region through implementation challenges. Furthermore, through establishing technical committees (Road, Rail, Transport Facilitation, Road Safety, Transport of Dangerous Goods) and the development of Action Plans for Road, Rail, Road Safety and Transport Facilitation (more specifically through measures related to sustainable and smart mobility), the Transport Community has already started activities on ensuring greening of transport in the Western Balkans.

Regional Cooperation Council

The Regional Cooperation Council (RCC) is an all-inclusive, regionally owned and led cooperation framework, that engages RCC participants from the South-East Europe (SEE), members of the international community and donors. **The RCC works to develop and maintain a political climate of dialogue, reconciliation, tolerance, and openness towards cooperation**, with a view to enabling the implementation of regional programmes aimed at economic and social development to benefit the people in the region²⁶. It has been tasked with coordinating the development of the Green Agenda on a regional level.

²⁵ Source: https://ec.europa.eu/info/about-european-commission_en

²⁶ Source: <https://www.rcc.int/pages/2/about-us>



Energy Community Treaty

The Energy Community is an international organisation which brings together the European Union and its neighbours to create an integrated pan-European energy market. The organisation was founded by the Treaty establishing the Energy Community signed in October 2005 in Athens, Greece. The key objective of the Energy Community is to extend the EU internal energy market rules and principles to countries in South-East Europe, the Black Sea region and, beyond based on a legally binding framework²⁷. One of the areas the Energy Community is working on is renewable energy in the transport sectors and, ensuring supply of alternative fuels in the Western Balkans region.

²⁷ Source: <https://www.energy-community.org/aboutus/whoweare.html>

3.

OVERALL ECONOMIC, SOCIAL, AND TECHNOLOGICAL TRENDS



3.1. ECONOMIC CONTEXT

Economic development has the most important role in the development of transport demand, and investment in transport contributes to positive GDP growth. The Western Balkans has a total population of about 20 million and a combined GDP of roughly € 80 billion²⁸. The weak economic performance, combined with political instability and upheaval over recent decades, has left the region behind EU comparators in terms of prosperity and living standards. The average GDP per capita for the six Regional Parties is only half the average of the 11 EU Member States of Eastern Europe (EU-11: Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic and Slovenia) and just one-quarter of the most advanced Western European countries:²⁹ In 2018, GDP per capita in EU-28 amounted to € 28,250. At the same time, GDP per capita in Montenegro was € 6,230, in North Macedonia it was € 4,130 and in Serbia it was € 5,200³⁰. GDP to debt ratios (varying across the region, ranging from 81 per cent in Montenegro to 18 per cent in Kosovo) are still comparatively lower than the EU-27 average of 80 per cent³¹. Additionally, like the rest of Europe, **the Western Balkans is sustaining recessions due to the COVID-19 pandemic.**

The Western Balkans countries share similar economic structures and therefore face common challenges related to growth: unemployment rate, insufficient GDP rate, aging societies and increasing emigration. The structure of GDP is unfavourably skewed towards domestic consumption and all the Regional Parties have negative net exports of goods and services³². Serbia recorded more than half of the region's exports in 2016, followed by Bosnia and Herzegovina and North Macedonia, with approximately 10 per cent each. Moreover, Serbia accounted for almost 43 per cent of regional imports in 2016, followed again by Bosnia and Herzegovina with 20 per cent and North Macedonia with 15 per cent. These trends do not match the economic size of the countries. Serbia and North Macedonia's share in regional trade is higher than their GDP share, Bosnia and Herzegovina is proportional, and Albania, Kosovo and Montenegro fall short in trade considering their economic sizes.³³

Economic activity in the Western Balkans is projected to contract due to the impact of the COVID pandemic. The primary causes are the drop in both domestic and foreign demand and disruptions in supply chains, especially as early in the year countries imposed severe containment measures, such as lockdowns, globally. A second and much stronger wave of the pandemic (since mid-June) and, political uncertainty about elections in some of the Regional Parties have further impeded economic recovery. Before COVID-19 (in 2020), most of the Regional Parties had made notable progress in reducing poverty and boosting household incomes. The crisis interrupted, and in some cases reversed, this growth. In Albania,

28 Sanfey, P. and Milatović, J., "The Western Balkans in transition: diagnosing the constraints on the path to a sustainable market economy - Background paper for the Western Balkans Investment Summit", 2018

29 Sanfey, P. and Milatović, J., "The Western Balkans in transition: diagnosing the constraints on the path to a sustainable market economy - Background paper for the Western Balkans Investment Summit", 2018

30 Source: https://ec.europa.eu/eurostat/databrowser/view/sdg_08_10/default/table?lang=en

31 OECD, "The COVID-19 crisis in the Western Balkans - Economic Impact, policy responses and short-term sustainable solutions", 2020

32 Uvalić, M. and Cvijanović V., "Towards A Sustainable Economic Growth and Development in the Western Balkans", 2018

33 OECD, "Unleashing the Transformation Potential for Growth in the Western Balkans", 2019



Kosovo, Montenegro, and Serbia, the pandemic is estimated to have pushed more than 300,000 people into poverty. In all six Regional Parties deficits are deteriorating drastically, from 4 to 10 per cent of GDP for most and almost 12 per cent for Montenegro. Public debt is projected to peak in 2021 at close to 60 per cent in North Macedonia and Serbia, 81.3 per cent in Albania, and 97.9 per cent in Montenegro.

Table 1. GDP forecast

Regional Party	2019	2020 (estimate)	2021 (forecast)	2022 (forecast)
Albania	2.2	-8.4	5.0	3.9
Bosnia and Herzegovina	2.6	-3.2	3.0	3.5
Kosovo	4.2	-8.8	3.7	4.9
Montenegro	4.1	-12.4	6.9	4.2
North Macedonia	3.6	-4.1	3.6	3.5
Serbia	4.2	-3.0	2.9	3.3
Western Balkans	3.6	-4.8	3.5	3.6
EU-27	1.5	-8.4	4.5	..
Central and Eastern Europe (CEE) ³⁴	3.9	-5.2	4.4	..

The European Union is the main trading partner for the Western Balkans economies, with 68 per cent exports and 61 per cent imports in 2019³⁵. Germany and Italy accounted for 22 per cent and 18 per cent of total exports, respectively, and 13 per cent each of total imports in 2016. Considering this proportion of trade with the European Union, further economic integration will positively impact regional growth. Easy and free access to the EU Single Market will be a vital advantage for the region. Exports to non-EU economies include the Russian Federation, Turkey, the United States, and the People's Republic of China is not as substantial (about 10 per cent).³⁶

Naturally, **the largest investors in the Western Balkans region are companies from the European Union**. They invested over € 10 billion from 2013 - 2018. Although the region is a viable trading partner for the European Union, the Regional Parties face obstacles including political instability, weak rule of law, issues with protection of property rights, and inadequate tax policies. These may seem internal and related to each of the Regional Parties alone, however, they are linked with their level of cooperation and unsolved bilateral issues.³⁷

The increase in public infrastructure investment has both short- and long-term effects on economic activity. In the short term, it boosts aggregate demand through fiscal multiplier effects and, given the complementary nature of infrastructure services, by crowding in private investment in the periods ahead. In the long term, it should have a supply-side effect as the productive capacity of the economy expands,

³⁴ CEE - Bulgaria, Croatia, the Czech Republic, Hungary, Poland and Romania

³⁵ Source: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Western_Balkans-EU_-_international_trade_in_goods_statistics&ol did=512860#The_Western_Balkans_trade_with_the_EU_and_other_main_partners

³⁶ OECD, "Unleashing the Transformation Potential for Growth in the Western Balkans", 2019

³⁷ Civil Society Forum of the Western Balkans, "Policy Brief 03/19 - Economic Issues in the Western Balkans", 2019

especially if the efficiency of public investment (for example, project selection, implementation, and monitoring) is high. Ultimately, good public infrastructure investment raises productivity and potential output and—if appropriately financed—need not compromise debt sustainability over the medium and long terms³⁸. Projects related to infrastructure and energy showed progress in the preparation phase, however, once implementation commenced, the Regional Parties displayed technical difficulties such as land expropriation, insufficient fiscal capacities, and lack of administrative capability.

The Western Balkans region has been struggling with the pressure of increasing unemployment, low employment and participation rates, rising poverty and inequality. **On average, unemployment rates among youth were at 35 per cent in 2018, twice as high as the EU average.** Furthermore, 20 per cent of young people were neither employed nor attending any education or training. This number varied from 24 per cent in Montenegro to 55 per cent in Kosovo³⁹. The total employment impact from the COVID-19 pandemic is expected to be unprecedented and broad-based. By June 2020, the unemployment rate in the entire region rose by 0.5 per cent and around 139,000 jobs had been lost⁴⁰. Almost 40 per cent of all private sector employees in the Western Balkans (2.1 million) were covered by wage subsidies. Despite that, the average unemployment rate in June 2020 was estimated to be 15.9 per cent, up 0.5 per cent from June 2019⁴¹. According to the World Bank study, transport, storage, and communications have seen some workers negatively affected, more so in the aviation industry⁴².

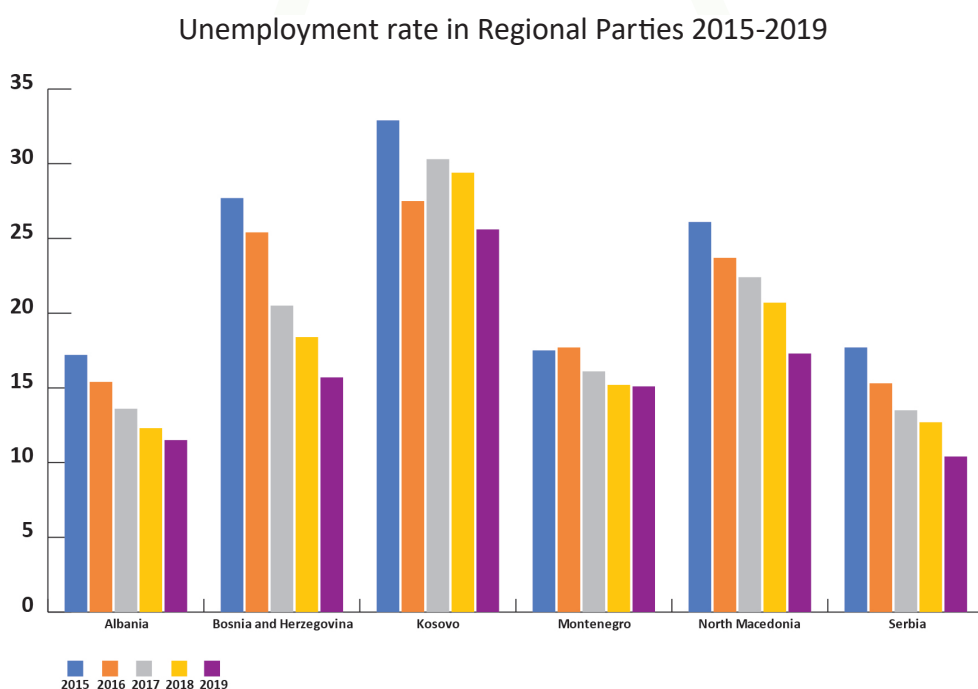


Figure 1. World Bank - Unemployment rate in Regional Parties 2015 – 2019⁴³

38 IMF, "Public Infrastructure Investments in the Western Balkans", 2018

39 Civil Society Forum of the Western Balkans, "Policy Brief 03/19 - Economic Issues in the Western Balkans", 2019

40 World Bank, "Western Balkans Regular Economic Report No. 19", 2020

41 World Bank, "Western Balkans Regular Economic Report No. 19", 2020

42 World Bank Group, "The Economic and Social Impact of COVID-19", 2020

43 Source: <https://data.worldbank.org/indicator>



Additional factors influencing GDP, include remittances, support packages, travel and tourism and agriculture. According to the OECD research⁴⁴, remittances, which constitute 10 per cent of the GDP in the Western Balkans, are likely to diminish due to travel restrictions and increased unemployment, linked to the anticipated economic contraction in the EU. **Support packages**, including financial support to the health sector, introduced by Western Balkans Governments during the pandemic, will lead to further fiscal deficit and accumulation of debt. As **travel** and **tourism** are amongst the most affected sectors during the crisis, Albania and Montenegro will be hit particularly hard, as tourism revenues exceed 20 per cent of GDP in both economies (EBRD, 2020)⁴⁵. Tourism directly contributes 15 per cent to overall GDP of the Western Balkans, and it supports a multitude of jobs and industries. It accounted for around 550,000 jobs in 2019⁴⁶. **Agriculture** still contributes a high share of gross value added in the whole region, much higher than the EU average. The importance of agriculture for employment, exports, food sovereignty and the fight against climate change has traditionally been neglected⁴⁷. These are the factors which influence economic growth in the region and therefore influence transport infrastructure improvement and expenditure.

As highlighted in the European Commission's Economic and Investment Plan to the Western Balkans in tackling the COVID-19 pandemic and the post-pandemic recovery⁴⁸, the COVID-19 pandemic has brought to the forefront the high level of market integration and the inter-dependence between the EU and the Western Balkans economies, as well as amongst the latter themselves. The Western Balkans has started activities to develop a **Common Regional Market (with RCC, CEFTA and Transport Community Permanent Secretariats as leading regional organisations to facilitate the implementation)**, as a stepping-stone to integrate the region more closely with the EU Single Market before they accede to the European Union. This is important for the region to leverage its privileged relation with the European Union. According to a World Bank study, such an enhanced market integration of the Western Balkans could bring an additional 6.7 per cent GDP growth to the region⁴⁹. Implementation of the Transport Community Treaty will contribute to achieving a Western Balkans single market and enable seamless logistics between the Regional Parties.

COVID -19 PANDEMIC IMPACT ON REGIONAL CONNECTIVITY

The COVID-19 pandemic highly impacted regional transport and connectivity and has shown the importance of having a resilient transport system in place. According to the OECD notes⁵⁰ transport is amongst the most affected industries in the region. The figures indicate a decrease in imports and/or exports, especially for Albania and Montenegro where numbers for both dropped by between 20 per cent to -40 per cent. The OECD note shows a lesser decrease for Serbia and Bosnia and Herzegovina, – by around 10 per cent.

Large demand variations followed by supply chain disruptions from one side and reductions in passenger travel from the other has exposed the vulnerabilities of the transport system, especially in international movements. For example, a drop in the numbers of air passengers for North Macedonia in March 2020 amounted to – 56 per cent compared to the previous year, falling from 164,000 to 72,000⁵¹ and for Serbia

44 OECD, "The COVID-19 crisis in the Western Balkans - Economic Impact, policy responses and short-term sustainable solutions", 2020

45 EBRD, "Regional Economic Prospects - COVID-19: From Shock to Recovery", 2020

46 OECD, "The COVID-19 crisis in the Western Balkans - Economic Impact, policy responses and short-term sustainable solutions", 2020

47 Uvalić, M. and Cvijanović V., "Towards A Sustainable Economic Growth and Development in the Western Balkans", 2018

48 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: An Economic and Investment Plan for the Western Balkans, COM (2020) 641 final

49 EBRD, "Regular economic report on the Western Balkans: Fall 2019", 2019

50 OECD, "COVID-19 crisis response in South East European economies", 2020

51 EUROSTAT, "Impact of COVID-19 on air passenger transport", 2020



by 8 per cent, from 1,110,369 to 1,018,363 passengers in the first quarter of 2020. The data for the second quarter exemplifies the hard situation of the air transport industry, as the number of passengers for North Macedonia fell by 100 per cent, from 602,715 to 2,738 and for Serbia by 94 per cent, from 1,665,482 to 94,585 passengers in the second quarter of 2020⁵². According to EUROSTAT, data for rail passenger transport show that the number of passengers in Montenegro decreased by 20 per cent, from 192,000 to 154,000 passengers and for North Macedonia by 28 per cent, from 130,000 to 93,000 passengers in the first quarter of 2020 compared to the same period in 2019. The numbers for the second quarter are more striking and indicate a drop by 78 per cent for Montenegro, from 256,000 to 57,000 and by 81 per cent for North Macedonia, from 147,000 to 28,000 passengers⁵³.

The COVID-19 pandemic also led to substantial operational and financial difficulties for transport/ logistics operators and influenced transport workers' rights and employment. Long wait times on external border-crossings with the EU during the COVID-19 pandemic worsened already poor safety and sanitary conditions. Regarding transport employment, the first initial data shows that the aviation industry was affected the most.

3.2. DEMOGRAPHIC TRENDS

Freight and passenger mobility demand has grown with the expansion of the global population especially in urban areas. New demographic trends such as the aging population has influenced mobility patterns and current transport planning practices will need to be reconsidered. **In coming decades, most of the Regional Parties are projected to see declining and ageing populations.** By 2050, it is expected that more than 20 per cent of all inhabitants will be over 65 in all the Regional Parties. Ageing is an important trend for the present and future throughout Europe, including the European Union, and the Western Balkans is not exempt from it. It will most probably start to present an important challenge for governments in the region and affect finances and social programs and transport systems will need to be adjusted. The decline in the working-age population could potentially slow down the economic growth and budgets may come under pressure.

Population projections for Regional Parties 2020-2030

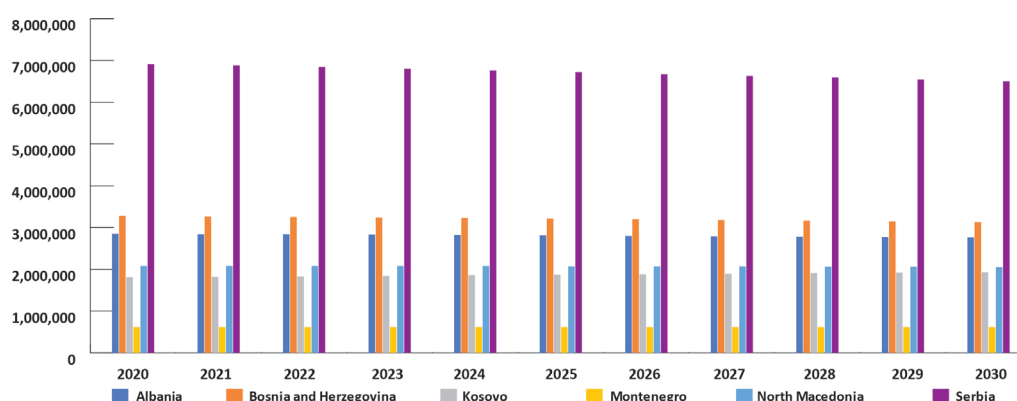


Figure 2. World Bank - Population projections for Regional Parties 2020 – 2030⁵⁴

52 EUROSTAT, "Impact of COVID-19 on air passenger transport in Q2 2020", 2020

53 EUROSTAT, "Impact of COVID-19 on air passenger transport in Q2 2020", 2020

54 Source: <https://data.worldbank.org/indicator>

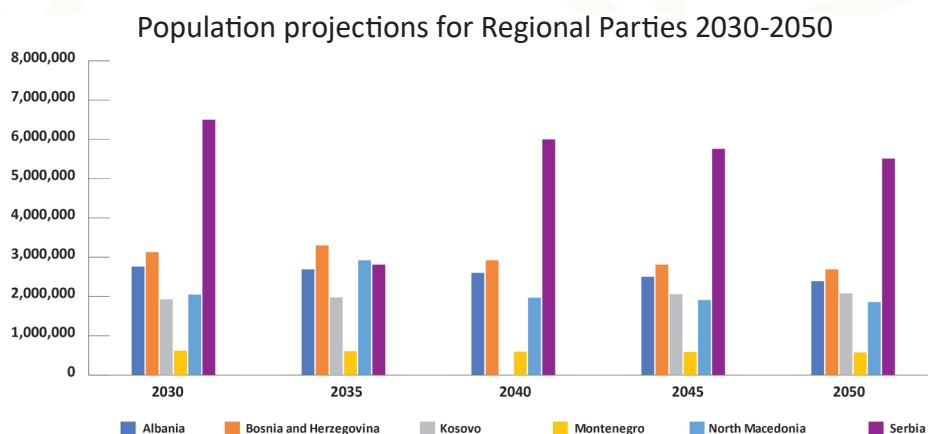


Figure 3. World Bank - Population projections for Regional Parties 2030 – 2050⁵⁵

3.3. NEW TECHNOLOGIES, CHANGING CONSUMER BEHAVIOUR AND WORKING CONDITIONS

So far, the **new technologies** that affect the Western Balkans are likely to be developed and introduced first elsewhere in the world. In past decades, the United States, the European Union, and Japan have led the world in the development of various technologies. In the future, it is arguable that China, India, and other countries are likely have a more prominent role. Governments in the region can nonetheless support new technology in the region by encouraging universities and businesses to cooperate with their counterparts in Europe and worldwide. The share of GDP for **research and development** expenditure is quite small in the Western Balkans region.⁵⁶

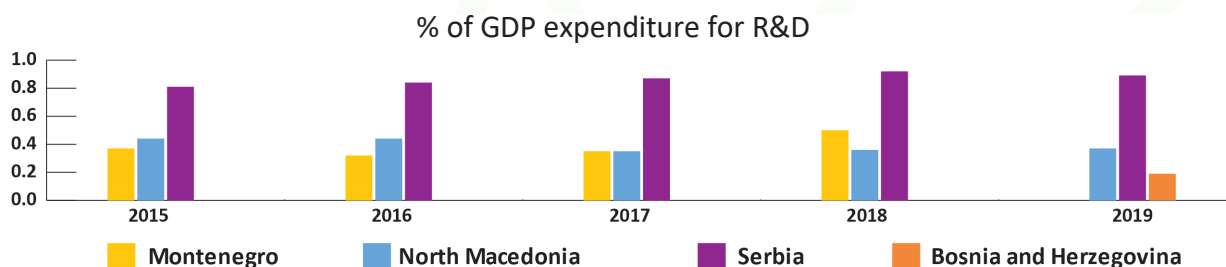


Figure 4. Gross domestic expenditure R&D, 2015-2019⁵⁷

In 2019, EU Member States spent over € 306 billion on R&D. The R&D intensity, i.e. R&D expenditure as a percentage of GDP, stood at 2.19 per cent, compared with 2.18 per cent in 2018. Ten years earlier (2009), R&D intensity was 1.97 per cent. The highest R&D intensity was recorded in Sweden (3.39 per cent), Austria (3.19 per cent) and Germany (3.17 per cent). Eight EU Member States recorded a R&D intensity below 1 per cent of GDP: Romania (0.48 per cent), Malta (0.61 per cent), Cyprus (0.63 per cent), Latvia (0.64 per cent), Ireland (0.78 per cent), Slovakia (0.83 per cent), Bulgaria (0.84 per cent) and Lithuania (0.99 per cent).⁵⁸

55 Ibid

56 OECD, "Competitiveness in South East Europe: A Policy Outlook", 2018

57 Ibid; Note: Data for Albania and Kosovo not available

58 Source: <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20201127-1>



Online shopping, social media use and teleconferencing have increased because of COVID-19 restrictions and measures. Accelerated digitalisation could reflect not only on ICT products and services, but also on traditional businesses. As numerous activities have shifted online, companies are finding new ways to reach more customers at lower costs. However, this digitalisation is uneven across and within the Regional Parties.

The COVID-19 pandemic will most likely lead to some permanent changes in overall consumption and preferences such as acceleration of automation, e-commerce, home-based work, and electronic modes of communication, which the private sector will have to adjust to. An analysis of the trends before the pandemic showed that 40 to 50 per cent of firms in Serbia, Bosnia and Herzegovina, North Macedonia, and Albania reported having adopted new products or services in the 3 years before the pandemic (just above the national average). In Kosovo and Montenegro only 30 and 20 per cent of firms reported having taken on new products. Furthermore, less than 30 per cent of firms had adopted new business processes before the pandemic, (just below the national average.⁵⁹)

Lower prior experience with **teleworking** could affect its future productivity for the Western Balkans economies. According to the Eurostat (2019), based on available data, only about one third of individuals aged 25 to 64 with high formal education had worked from home (at least once) in 2018 and only one-fifth had used the Internet for the job when working from home in the five Western Balkans economies. For the European Union, the corresponding average figures stood at 43 per cent and 41 per cent respectively⁶⁰.

59 World Bank, "Western Balkans Regular Economic Report No. 19", 2020

60 OECD, "COVID-19 crisis response in the South East European Economies", 2020



4.

GREENHOUSE EMISSIONS IN THE WESTERN BALKANS

The Western Balkans has already seen severe consequences of climate change (E.G floods in Bosnia and Herzegovina and, Serbia in 2014). This region is one of the most affected by climate change in Europe with **estimated temperature increases of 1.7 – 4.0°C**, and even expected to exceed 5.0°C by the end of the century, depending on the global effort to reduce greenhouse gases emissions.

Almost all the Regional Parties (except Kosovo) have ratified the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol and the Paris Agreement. According to the Paris Agreement, the region is committed to keeping the global average temperature increase to well below 2° and to pursue efforts towards limiting global warming to 1.5°. As a part of EU acquis, namely European Climate Law, **climate neutrality will be reflected in the EU's bilateral relations and accession negotiations** with the Western Balkans. Therefore, the region should already have started transforming their societies accordingly. Reducing the emissions of air pollutants and greenhouse gases (GHG) is a priority which is strongly interlinked with energy, transport, and health policies, among others⁶¹.

Regional Parties are at different stages in addressing air pollution issues in terms of national strategies, policy development, funding, monitoring, and reporting. Moreover, progress in the climate sector is slower than progress against air pollution⁶².

Under the Ambient Air Quality Directives, Member States must comply with air quality standards for various pollutants harmful to human health. **Despite the progress made, the implementation of the Ambient Air Quality Directive is not fully effective in all the Regional Parties** and air quality monitoring networks, online data process and QA/QC procedures are at different stages of development. Often, air pollution reporting in the Western Balkans does not fulfil all the required criteria and the number and proportion of reporting stations, time series and data coverage are quite variable⁶³.

Particulate matter (PM₁₀ and PM_{2.5}), SO₂, O₃ and NO₂ concentrations are often above the yearly average, and daily and hourly maximum limits. Despite the decreasing trend in air pollutant emissions observed in some Regional Parties, particulate matter is critical in almost all of them and the hourly SO₂ and NO₂ concentrations are elevated in most areas. Air pollution in the Western Balkans is influenced by meteorological conditions, mainly air temperature and humidity. Ozone and particulate matter episodes in the Balkans region in 2017 coincided with elevated air temperatures⁶⁴.

Thermal power plants, industry, residential heating, transport, agriculture, and uncontrolled waste burning are the main sources of PM₁₀ emissions in the Western Balkans region. Despite the decreasing trend in yearly average PM₁₀ pollution, concentrations are still above the limits. In 2018, the yearly average concentrations of fine particles (PM_{2.5}), an indicator of health impact, was up to six times the WHO guidelines (10 µg/m³). Thermal power plants and industry are among the main causes of SO₂ emissions in

61 Banja M., Đukanović G., Belis C.A., "Status of air pollutants and greenhouse gases in the Western Balkans: Benchmarking the accession process progress on environment", 2020

62 ibid

63 ibid

64 Banja M., Đukanović G., Belis C.A., "Status of air pollutants and greenhouse gases in the Western Balkans: Benchmarking the accession process progress on environment", 2020

the region while thermal power plants and the transport sector are the main sources of NO_x emissions. In most Regional Parties, the emissions from large combustion plants are higher than the emission ceilings established in the existing/drafted national emissions reduction plans for SO₂ and dust⁶⁵.

Routine work to identify the actual contribution from different sources to atmospheric pollution (source apportionment) is still rare in the Western Balkans region. Data from some studies identified the combustion of solid fuels as a major factor responsible for the fine particulate matter. Secondary pollution from the agricultural sector and transboundary pollution, from both within and outside the region, are also important drivers. CO₂ emissions from fossil fuels combustion has been increasing in the Western Balkans region since 2000. Despite the growth in renewables since 1990, the energy mix portfolio in the region is still dominated by fossil fuels⁶⁶.

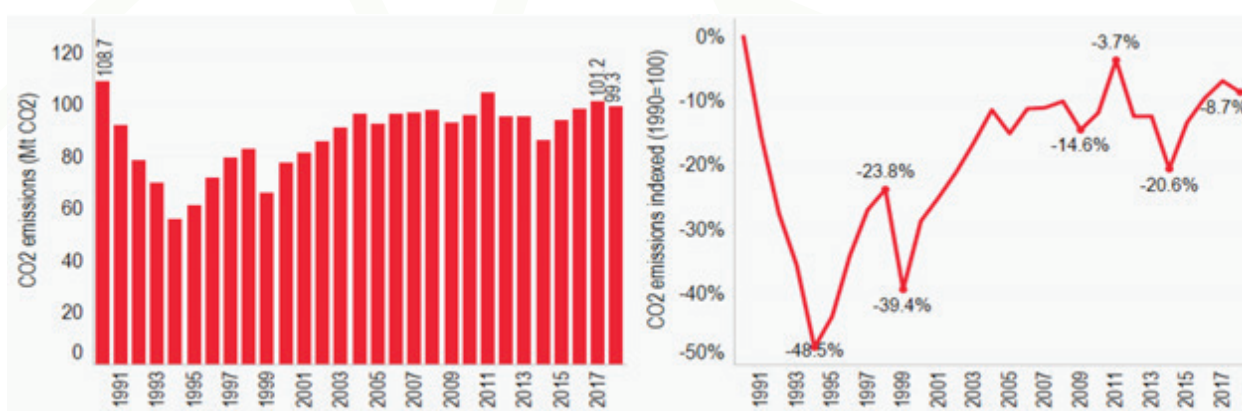


Figure 5. Trend of CO₂ emissions in Western Balkans region: 1990-2018 (left) - relative change vs. 1990 (right)⁶⁷

TRANSPORT SECTOR EMISSIONS

Main sources of GHG emissions in the region are energy and transport, encompassing two thirds of overall share. The Western Balkans region produced almost 100 Mt CO₂ emissions from fossil fuel combustion and processes in 2018, equivalent to almost 3 per cent of the EU CO₂ emissions in that year (3457 Mt CO₂). Level of emissions remained almost the same as in 1990, despite improvements in the industry. In 1990, half of the CO₂ emissions from fossil fuels combustion and processes originated from the power industry while in 2018, the relative share of the power sector increased to 61 per cent. The **Transport⁶⁸ sector represented 12 per cent share of these emissions in 1990 and its share increased to 16 per cent in 2018⁶⁹.**

65 ibid

66 ibid

67 ibid

68 Includes road transport, non-road transport, domestic aviation and inland waterways for each regional party.

69 Banja M., Đukanović G., Belis C.A., "Status of air pollutants and greenhouse gases in the Western Balkans: Benchmarking the accession process progress on environment", 2020



The current share of transport emissions in the EU is 25 per cent⁷⁰, encompassing international aviation⁷¹. In both the Western Balkans and EU there is still an increasing trend caused by motorisation, tourism, and other economic factors. In over 25 cities located in the Regional Parties, limit values for one or more pollutants harmful to human health has been exceeded for many years, and transport has been one of the main contributors.⁷²

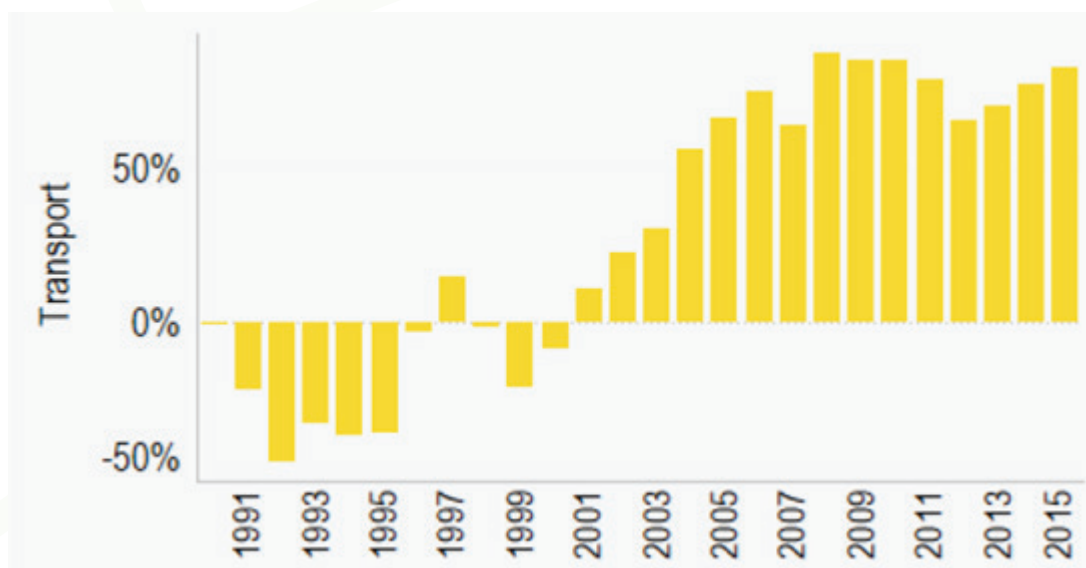


Figure 6. Changes in Western Balkans GHG emissions relative to 1990, transport sector⁷³

Five subcategories contribute to the emissions: Road Transportation, Railways, domestic Aviation, Maritime, and Inland Waterway transport. **The overall share of transport emissions is dominated by the share of CO₂ emissions from road transport (above 90 per cent in the Regional Parties)**, despite no domestic air traffic, and low GHG emissions from rail transport. Main reasons influencing road emissions are outdated fleets and limited usage of alternative fuels.

Concerted actions to prevent climate change, to build resilience and readiness to adapt to climate change is urgently needed. As the main contributors to climate change, energy and mobility sectors should be among the first to be adequately addressed and transformed. These sectors are still heavily dependent on coal and other fossil fuels with huge negative environmental impact. Therefore, substituting fossil with bio-and other alternative fuels in transport, improving rail and inland waterway sectors and developing smart mobility solutions should be the key areas of intervention.

⁷⁰ Transport excluding international maritime (international traffic departing from the EU), including international aviation

⁷¹ Commission Staff Working Document Accompanying the document Communication From The Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee Of The Regions: Sustainable and Smart Mobility Strategy –putting European transport on track for the future

⁷² Banja M., Đukanović G., Belis C.A., "Status of air pollutants and greenhouse gases in the Western Balkans: Benchmarking the accession process progress on environment", 2020

⁷³ Banja M., Đukanović G., Belis C.A., "Status of air pollutants and greenhouse gases in the Western Balkans: Benchmarking the accession process progress on environment", 2020

5.

ANALYSIS OF CURRENT STATUS BY FLAGSHIPS



The European Union's 'Sustainable and Smart Mobility Strategy' together with an Action Plan of 82 initiatives in 10 key areas for action ("flagships"), stipulates that all transport modes need to become more sustainable, with green alternatives widely available and the right incentives put in place to drive the transition. Furthermore, in the Sofia Leaders Declaration on the Green Agenda for the Western Balkans, the region has committed to working towards the 2050 target of a carbon-neutral continent together with the EU, through mainstreaming a strict climate policy and reforming its energy and transport sectors.

To pave the way toward sustainable and smart development of transport in the Western Balkans, as a first step, it is necessary to have a full understanding of the current progress, as well as mapping the gaps between the Western Balkans and EU for each of the key areas for actions (flagships). The aim of the gap analysis provided below is to assess, for each flagship, the current state of play for already mature issues pertinent to the current development of the Western Balkans in addition to identifying those issues that are still at an infancy stage. This will allow for better tailor-made actions for the future to match the maturity of the developments.

5.1. SUSTAINABLE MOBILITY CHALLENGES

5.1.1. FLAGSHIP 1 – ZERO-EMISSION VEHICLES, RENEWABLE & LOW-CARBON FUELS AND RELATED INFRASTRUCTURE

To achieve the objectives set in the European Green Deal, Green Agenda and Paris Agreement, it is necessary to boost the uptake of low- and zero- emission vehicles and vessels supported by renewable and low-carbon fuels for road, waterborne and, air and rail transport. There is a need to ensure that sustainable vehicles and fuels are supplied by the industry, infrastructure is put in place, and demand by end-users incentivised. It will also be essential to support research and innovation on competitive and future-proof technologies, products, and services.

ZERO EMISSION VEHICLES

Road. The principal mode of passenger transport in Western Balkans, and EU-27, is **passenger cars**. While the motorisation rate in EU-27 was estimated at 519 passenger cars per 1,000 inhabitants in 2018, in the Western Balkans it was 233 passenger cars per 1,000 inhabitants (with Montenegro being in the lead with 332 passenger cars per 1,000 inhabitants). In the same year, the share of road transport in total inland freight transport was 75.6 per cent across EU-27 while the proportions in Western Balkans were: 97.2 per cent in North Macedonia, and 78.9 per cent in Bosnia and Herzegovina (2018 data). There was a relatively high use made of rail for freight transport in Serbia (63.1 per cent) and Montenegro (55.7 per cent).⁷⁴

74

Source: https://ec.europa.eu/eurostat/statistics-explained/index.php/Enlargement_countries_-_transport_statistics



Vehicles in the Western Balkans have an average age of above 11 years and the share of new vehicles is particularly low. Most of the vehicles originate from a time before significant improvements to EU regulation for limiting air pollutants and CO₂ emissions from new vehicles were made.⁷⁵ Some of the Western Balkans parties addressed the problem of imported vehicles with particularly high air pollutants and the introduction of new and improved emissions standards.

The uptake of electrical and hybrid road vehicles in the Western Balkans is low, counting less than 1 per cent⁷⁶, compared to the EU share of electrical vehicles registered until 2019 (2.88 per cent⁷⁷). There has been a steady increase in the acceptance of road vehicles using a combination of traditional fuels (diesel and gasoline) with electricity fuelled cars, CNG etc counting for over 15 per cent⁷⁸ of the road vehicles fleet.

Rail. In terms of Rail, **zero – emission vehicles in the Western Balkans territories rely on electric traction** as there is no infrastructure nor vehicles capable using other types of energy.

Waterborne. In waterborne transport in the Western Balkans, currently, **there are no zero emission vessels used either in inland waterways or maritime transport**. Core maritime ports and inland waterways core ports do not ensure the availability of clean fuels. Encouraging the replacement of main drive engines of pusher vessels with new ecological engines and promoting the idea of using LNG with the aim of reducing emissions of harmful gases are some of the areas already part of the existing waterborne strategies of the Regional Parties⁷⁹.

FUEL SUPPLY

There are several issues that prevent the interest in sustainable fuels in the transport sector: low demand for the fuels and vehicles, lack of incentives, lack of a suitable refuelling/recharging network and limitation of appropriate supply.

In all the Regional Parties oil and petroleum products are the dominant type of fuel. The transport sector in the region is based on oil derivatives (petrol, diesel fuel, and liquefied petroleum gas – LPG) for road traffic (the most significant share) and, electricity and diesel for rail traffic. According to the structure of fuels used to power registered vehicles, the highest-represented vehicles run on diesel and motor gasoline.

Implementation of energy efficiency measures in the transport sector is still at its early inception. Significant shares of other types of fuel are biofuels in Albania which has a significant consumption of biofuels of above 10 per cent, which is not compliant with the Renewable Energy Directive. Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia have renewable electricity consumption in rail. For example, in Serbia out of 2 per cent renewable energy consumption, electricity makes up 1.5 per cent. Rail has smaller shares in the other Regional Parties, with zero electricity consumption in rail in Albania and Kosovo.⁸⁰ Electricity is consumed in public transport by trolleybuses operated in Serbia, tramways operated in Bosnia and Herzegovina and, Serbia.

75 Ecologic Institute and Fraunhofer Institute for Systems and Innovation Research ISI (2020), Used vehicle trade and fleet composition in Europe. Final report of the project “Used vehicle trade and fleet composition in Europe” on behalf of the EEA

76 Statistical offices of Regional Parties

77 Source: <https://www.acea.be/statistics/tag/category/share-of-alternative-fuel-vehicles-per-vehicle-segment>

78 Statistical offices of Regional Parties

79 Strategy on waterborne transport development of the Republic of Serbia, 2015-2025

80 Altmann, M., Schmidt, P., Raksha, T., Albrecht, J., Bauen, A., Howes, J., German, L., Roberts, L., Bulic, P., Vulić, P., Vulić, I., Tomić, M., “Modalities to foster use of renewable energy sources in the transport sector by the Energy Community Contracting Parties”, 2020

The Energy Community plays an active role in supporting the region in reaching renewable energy in transport. They set a specific target for renewable energy in transport (RES-T) of 10 per cent by 2020 based on the Renewable Energy Directive (RED) of 2009. None of the Regional Parties achieved this target. RED II revised the sustainability criteria for biofuels and has significantly enhanced the options for renewable electricity and renewable fuels of non-biological origin (RFNBO) including hydrogen to contribute to the RES-T targets. It has set an overall target of 14 per cent renewable energies in transport by 2030, albeit with options for EU Member States to adjust that target⁸¹.

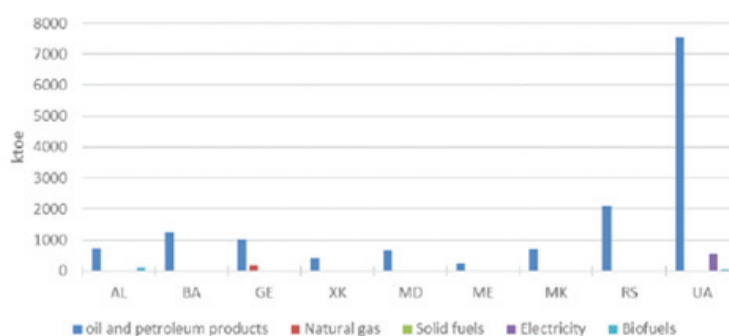


Figure 7. Absolute energy consumption in transport by type of fuel in 2018⁸²

Renewable energy consumption in transport is generally low in the Western Balkans, except in Albania where there is a greater share of biofuels. However, these do not fulfil sustainability requirements, and are thus not compliant with the Renewable Energy Directive. Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia have renewable electricity consumption in rail. This is based on significant shares of rail in Serbia (2.0 per cent, of which 1.5 per cent is electric). Rail has smaller shares in the rest, with zero electricity consumption in rail in Albania and Kosovo.⁸³

The main polluter in the transport sector is road. As a general obligation of the Regional Parties to achieve targets by 2020, there was a specific target set for renewable energy in transport (RES-T) to be achieved by 10 per cent by 2020 which, based on the Renewable Energy Directive (RED) of 2009, none of the Regional Parties reached.

FUEL INFRASTRUCTURE

Road. There is a lack of a coordinated approach to build a sustainable network of recharging and refuelling infrastructure in the Western Balkans. Several issues need to be addressed, including:

- **Legal framework.** Overall, the implementation of any regulation in relation to the installation of e-charging points is still missing. Even in cases where the law provides Electrical Vehicles charging requirements, implementation is lacking. For example, the Albanian Road Code requires the installation of e-charging points within each service area that provides fuel supply, however, this is neither fully implemented nor monitored.

81 Ibid
82 Ibid
83 Ibid



- Alternative fuels recharging and refuelling stations. Availability of L-CNG is limited across the region. Serbia has the highest number of L-CNG refuelling stations in the region, but none are available in Albania, Kosovo, or Montenegro (as shown in Figure 8). Apart from Kosovo, Regional Parties in the Western Balkans offer a good availability of LPG refuelling stations along road networks. (See Figure 9)



Figure 8. Map of L-CNG stations in Western Balkans⁸⁴

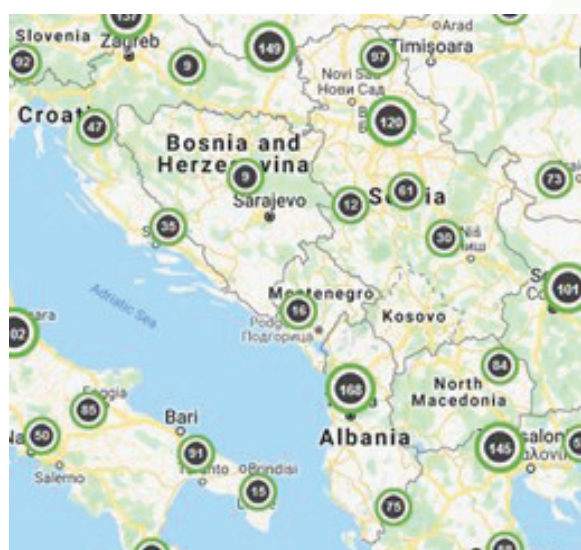


Figure 9. Map of LNG stations in the Western Balkans⁸⁵

The network of e-charging stations is patchy and limited to some of the main cities in the Western Balkans region. Only Serbia has implemented the approach of providing charging stations on the highway, at tolling stations. Five charging stations have already been installed.

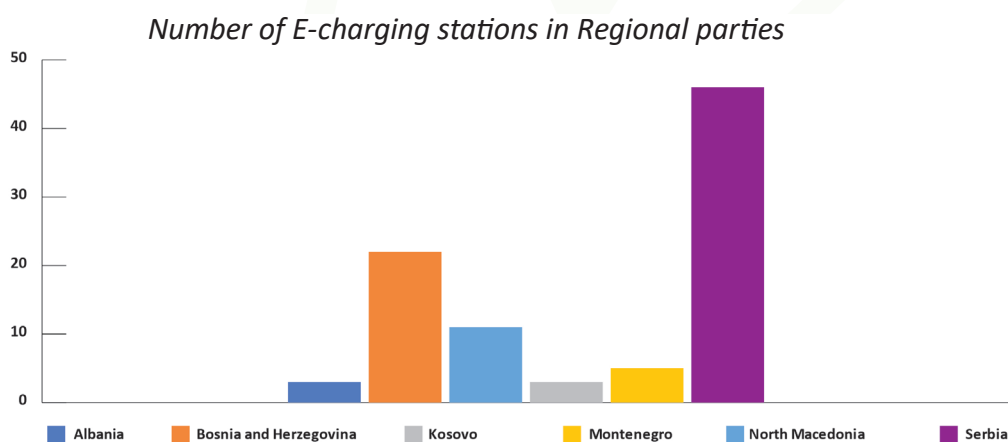


Figure 10. EV charges per Regional Parties⁸⁶

⁸⁴ Source: <https://www.ngva.eu/stations-map/>

⁸⁵ Source: <https://lpgstations.com>

⁸⁶ Source: <https://openchargemap.org>



- Incentives. Experience across different EU Member States and third countries show that **reducing registration and vehicle taxes on electrical vehicles is an effective way of generating consumer demand**. Additional policy measures could promote the uptake of zero emission vehicles and sustainable fuels. Across the region, different policy incentives have been put in place ranging from the exemption of VAT on the supply of new electric vehicles and, tax reductions or specified amounts of subsidies on the purchase of e-vehicles and hybrid vehicles. However, there are little to no incentives for the use of electricity or renewable fuels in public transport, nor any restrictions, limitations or obligations related to this.⁸⁷

Table 2. Policy measures/incentives to boost alternative fuels vehicles in the Western Balkans⁸⁸

Regional Parties	Policy measures/incentives to boost the uptake of alternative fuels vehicles
Albania	Exception from VAT on electric vehicles (in the case of the supply of new electric vehicles not previously registered in any other country). Registration tax for electric vehicles (based on cylinder capacity) count as 0 lek. Registration tax calculated on cylinder capacity (for hybrid vehicles).
Bosnia and Herzegovina	No special incentives for electric and hybrid vehicles related to customs rate and VAT, (except for a customs rate of 5 per cent on vehicles operating on electricity only, if they originate from countries which are not members of the European Union, or signatories of CEFTA and EFTA agreements, or from Turkey).
North Macedonia	Exemption from Motor Vehicles tax for fully battery-electric vehicles (defined by law). Motor vehicle tax reduced by 50 per cent for plug-in hybrid vehicles. No subsidies for citizens to buy electric or hybrid vehicles in state budget for 2021. Subsidy in place for installation of gas in old vehicles.
Kosovo	No regulations with respect to incentives for import or purchase of electric vehicles or hydrogen fuel cell vehicles.
Montenegro	Exemption from tax duties for electric motor vehicles.

⁸⁷ Altmann, M., Schmidt, P., Raksha, T., Albrecht, J., Bauen, A., Howes, J., German, L., Roberts, L., Bulic, P., Vulić, P., Vulić, I., Tomić, M., "Modalities to foster use of renewable energy sources in the transport sector by the Energy Community Contracting Parties", 2020

⁸⁸ Ibid



Serbia

Annual tax on use of motor vehicles not paid by owners of electric vehicles and hybrid vehicles.

No incentives for electric, i.e. hybrid vehicles in respect of customs rate and VAT.

Regulation on conditions and manner of implementation of subsidised purchase of new vehicles with exclusively electric drive, and vehicles with hybrid drive (adopted in March 2020).

Subsidy amount for purchase of e-vehicles and hybrid vehicles, hybrid passenger vehicles and hybrid light truck with CO₂ emissions up to a maximum of 100 g/km – 2,500 Euro, Plug In Hybrid Electric Vehicle (PHEV) and light truck, as well as electric vehicle and light truck with range extender with CO₂/km emissions up to a maximum of 50 g/km – 3,500 Euro, totally electric passenger vehicle and totally electric light truck – 5,000 Euro.

Incentives for public transport sector (introduced by adoption of Regulation on conditions and manner of conducting).

Subsidies for purchase of passenger vehicles for renovation of taxi fleet as public transport.

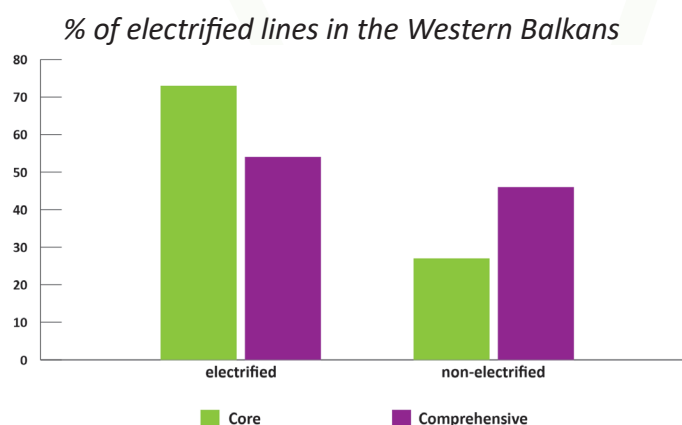
Case study – Installation of EV-charging in Serbia

In 2017, as a pilot project within the framework of road modernisation in the Republic of Serbia, 5 (five) chargers for electric cars were installed at key points on the highways, at the toll stations in “Presevo”, “Sid”, “Dimitrovgrad”, “Subotica” and at the former toll station “Belgrade” near Bubanj Potok (This will be moved to the toll station “Belgrade”, direction Belgrade-Nis, due to construction work on the bypass around Belgrade). The service of charging electric cars on existing chargers is currently free, and legal regulations for the introduction of charging for all users are being prepared.

At the time of installation, these were the most modern solution for charging vehicles of all manufacturers. There are three connectors - two for fast DC charging and one for fast AC charging. These stations provide fast power supply to electric cars, including next generation vehicles. (Maximum output power: 50 kW for DC and 22 kW for AC charging).

PE “Roads of Serbia” is currently installing ultra-fast electric chargers (175 kW), on the plateau of the former toll station “Nis” (one in the direction of Belgrade, and the other in the direction of Nis). Installed chargers will be networked through a billing, monitoring, and management system/platform.

Rail. Rail electrification compliance with the operational network is already on **1,807 km (73 per cent) of the Core** and **54 per cent or 2,002 km of the Comprehensive Networks**. The numbers reflect that currently Albania and Kosovo do not have electrified rail networks while the other Regional Parties have partially electrified networks:



Regional parties rail network electrification:

- North Macedonia (Core 79.7 per cent and 39.6 per cent Comprehensive)
- Serbia (Core 76.8 per cent and 63.4 per cent Comprehensive)
- Bosnia and Herzegovina (Core 100 per cent and 76.8 per cent Comprehensive)
- Montenegro (Core 100 per cent and 86.4 per cent Comprehensive)

Figure 11. Percentage of electrified lines in the Western Balkans⁸⁹

The Region lacks planning and project documents for electrification of parts of the network. In these regards, North Macedonia has tangible plans for electrification of Corridor VIII on existing and on newly planned rail tracks, Serbia for Corridor X (Nis – Dimitrovgrad) and Route 4 (Pancevo – Vrsac) for newly built lines, and Kosovo for Route 10, (which will be its first electrified line). These activities will improve the electrification ratio of the Regional Parties and contribute to the reduction of greenhouse gases emissions. Since available electrification directly affects the usage of adequate vehicles, the number of the electric traction vehicles in the fleets of rail undertakings is relatively irrelevant.

However, in most cases the **lack of electric locomotives Railway Undertakings accounts for the use of diesel locomotives on electrified sections** which not only increases operational costs of the service but also the external cost because of the lack of regular maintenance of rolling stock, the lack of investments and the lack of planning. Another problem with electric locomotives and EMUs is the relatively poor network of workshops for regular maintenance.

POLLUTANT STANDARDS, BATTERIES, AND ROADWORTHINESS

There is a lack of a unified approach on setting emissions standards by the respective authorities in the Western Balkans, it ranges from EURO 3 as the lowest to EURO 6. There is a clear distinction between used and new vehicles, with higher/better emissions standards set for new imported vehicles. The table below provides information for each Regional Party on imported new, used and freight vehicles.

89 Transport Community Permanent Secretariat, "Draft Transport Community Treaty Annual Report on the development of the TEN-T network", 2020



Table 3. Emissions standards for imported vehicles for each Regional Party⁹⁰

Regional Parties	Emission standards import of private vehicles	Emission standards import of freight vehicles
Albania	EURO 4 – used (not older than 10 years) EURO 5 - new	EURO 3 – used (not older than 15 years) EURO 5 - new
Bosnia and Herzegovina	EURO 5 – used EURO 6 - new	EURO 5 - used EURO 6 - new
North Macedonia	EURO 4	EURO 4
Kosovo	EURO 4 – used (not older than 10 years)	EURO 4 – used (not older than 10 years)
Montenegro	EURO 4 – used EURO 6 - new	EURO 4 – used EURO 6 - new
Serbia	EURO 3	EURO 3

More effective emissions testing should also be part of periodic technical inspections and technical roadside vehicle checks. This especially concerns testing for NO_x and particulate matter. Due to the lack of penetration of electrical vehicles, none of the Regional Parties have developed nor approximated any EU Commission's Directive on the sustainability criteria of vehicles batteries.

5.1.2. FLAGSHIP 2 – ZERO-EMISSION AIRPORTS AND PORTS

Compared to the other modes of transport, waterborne transport has greater decarbonisation challenges in the next decades. The reasons for that are multifold and some of the main factors can be contributed to the current lack of market-ready zero-emission technologies, long development and life cycles of vessels and, the required significant investments in refuelling equipment and infrastructure. International competition might also push for a faster deployment of the decarbonisation elements in waterborne transport.

The alternative fuels infrastructure in both inland waterways core network ports (Brcko, Samac, Novi Sad and Belgrade) and maritime core network ports (Bar and Durres) is currently non-existent due to the lack of demand for this type of infrastructure. Currently there are only ideas on developing strategies to put in place alternative fuels deployment considering demand, geography, and network characteristics. It is to be expected that maritime ports will engage in developing concepts of LNG bunkering. The port that is the most advanced in this area is Port of Vlora (south Albania), a comprehensive port in terms of the TEN-T network. In 2021, Excelerate Energy (operator in the floating LNG sector), ExxonMobil LNG Market Development and the government of Albania signed a Memorandum of Understanding to conduct a feasibility study for the potential development of a liquefied natural gas (LNG) project in the Port of Vlora⁹¹.

⁹⁰ Altmann, M., Schmidt, P., Raksha, T., Albrecht, J., Bauen, A., Howes, J., German, L., Roberts, L., Bulic, P., Vulić, P., Vulić, I., Tomić, M., "Modalities to foster use of renewable energy sources in the transport sector by the Energy Community Contracting Parties", 2020

⁹¹ Source: <https://www.portseurope.com/albanias-port-of-vlora-considered-for-new-lng-facility/>



In the maritime sector and ports, significant achievements in terms of planning documents have been made through INTERREG ADRIION projects, namely the SUPAIR project (Sustainable Ports in the Adriatic-Ionian Region) through which, Action Plans for a Sustainable and Low Carbon Port of Durres as well as Action Plans for a Sustainable and Low-carbon Port of Bar were developed in 2019.

The Port of Durres is one of biggest energy consumers. The Durres Port Authority Action Plan developed through the SUPAIR project focuses on 4 actions: Revitalisation of Green Spaces within and outside the port areas, a Recycling Plan for a Sustainable Port, a Mobility Plan for Durres Port Staff to increase the use of green transport modes and Clean Energy Investment (renewable)⁹².

Together with the Port of Durres, the Port of Bar is the second Core Maritime port of the extended TEN-T Network which has actively participated in a number of transnational INTERREG projects, such as the mentioned SUPAIR and SAGOV projects. Through this cooperation, **the Port of Bar started its “green port transformation”**. With the results obtained from the SUPAIR project, the Port of Bar will strive to ensure an energy efficient and largely emissions-free port operation, to reduce costs, improve the port’s overall efficiency and increase its environmental performance. One essential part of the port’s overall “energy sustainability strategy” is the Action Plan for a sustainable and low carbon Port of Bar that provides detailed and concrete information on how to reduce environmental impacts of port operation in a cost-efficient manner.⁹³

Establishing clean ports as well as ‘Emission Control Areas’ in all EU waters is another priority of the EU Sustainable and Smart Mobility Strategy, with the aim of zero pollution to air and water from shipping for the benefit of sea basins, coastal areas and ports. For inland navigation, the Commission is planning to put forward the NAIADES III programme to tackle key challenges such as the need to complete links with the rail network, ensure climate resilient infrastructure, renew barge fleets, and improve access to financing. The current situation in the Western Balkans, according to available data regarding green initiatives in water ways, is relatively poor in the inland waterway sector, but a bit more promising in the maritime sector.

Airports. Air transport provides air connectivity which is a key enabler for the free movement of people, goods and services underpinning, economic integration, and inclusive growth. Airports are generally built in the vicinity of dense residential area or are close to major cities. **While air connectivity brings significant socio-economic benefits, it also comes with climate, environmental and health challenges related to aircraft greenhouse, pollutants, and noise emissions.** Airports are hence subject to a range of cross-cutting environmental rules including on air quality, noise, and planning permissions (e.g., nature protection areas).

Decarbonising the air transport sector, in relation to addressing the challenges related to aircraft emissions reductions (including air and noise pollution), would also require investments into airport infrastructure and operations to optimise air traffic management and strengthen the integration of airports into a genuinely multimodal network. It would necessitate improving airports’ energy efficiency, ensuring the supply and infrastructure for sustainable aviation fuels, and hydrogen for hydrogen-powered airport operations and related services as well as renewable energy generation on-site, together with electrification and greening measures of airside activities such as ground handling, ground traffic operations and aircraft on the ground, and other measures reducing environmental impacts.

92 SUPAIR INTERREG ADRIION project, Action Plans for a Sustainable and Low Carbon Port of Durres, 2019

93 SUPAIR INTERREG ADRIION project, Action Plans for a Sustainable and Low Carbon Port of Bar, 2019



The Transport Community Treaty provisions exclude air transport however, they include airport infrastructure and its improvement. **Currently 10 airports** (Tirana, Sarajevo, Banja Luka, Pristina, Podgorica, Skopje, Ohrid, Beograd, Kraljevo, and Nis) **are part of the TEN-T Comprehensive in the Western Balkans, out of which 6 are located on the Core Network.** All airports are opened to international traffic and have foreign air carriers flying from/to them. As for the availability of alternative fuels, none of the airports currently has the infrastructure for sustainable aviation fuels although some of them (Belgrade, Nis, and Kraljevo) do use renewable energy sources either for running the airport or for ground handling.

Additionally, the **multilateral ECAA Agreement** between the European Union countries, its Member States and the Western Balkans (on the establishment of a European Common Aviation Area - signed in 2006), **sets conditions for the gradual integration of the parties into the EU internal market for aviation.** With this Agreement, the South-East European partners have agreed to the full application of the EU's aviation acquis. The Agreement encompasses the extension of the Single European Sky (SES) to SEE region with a threefold objective: „to enhance current air traffic safety standards, to contribute to the sustainable development of the air transport system and to improve the overall performance of the European Air Traffic Management (ATM) system and air navigation services.“. The ECAA Agreement was ratified by all EU Member States⁹⁴.

All Regional Parties have been making advancements in the implementation of the ECAA agreement but at different paces. Albania has continued preparations for the assessment visit requested under the European Common Aviation Area Agreement (ECAA), which will take place after adoption of the relevant national legislation. In Bosnia and Herzegovina, the 2009 Law on Civil Aviation is being revised so that it becomes aligned with the requirements of the European Common Aviation Area (ECAA). Kosovo is part of the European common aviation area and is covered by the single European sky arrangements. The Air Navigation Service Agency and the Civil Aviation Authority are facing funding difficulties and staff shortages. In Montenegro, amendments to the Law on air transport, were adopted in 2020 and published in the Official Gazette No. 82/20, and with these amendments the preconditions have been created to move on from the first to the second phase of ECAA Agreement. The new amendments will be instrumental in the successful completion of the first transitional phase of the European Common Aviation Area and the Single European Sky. North Macedonia has maintained a good level of alignment with the EU acquis and has partially aligned with the aviation safety legislation. Alignment and implementation of the Single European Sky legislation still needs to be verified by the European Aviation Safety Agency (EASA). Serbia is close to fulfilling all obligations stipulated in the first transitional period of the European Common Aviation Agreement. On the Single European Sky (SES), Serbia has completed its transposition process and the local implementation of SES I and SES II on air traffic⁹⁵.

5.1.3. FLAGSHIP 3 – INTERURBAN AND URBAN MOBILITY

URBAN MOBILITY ISSUES

Urbanisation has increased in the past decades and this trend is likely to continue. Mobility is also an urban issue, and it affects people living in cities and those travelling often to or through them. Many new aspects are changing how transport is being managed: through new options such as walking, cycling, micromobility, by improving and optimising urban logistics and first mile-last mile, or by introducing urban vehicle access regulations.

⁹⁴ RCC/SEETO, “Cost-benefit study for enhancing the Air Transport Connectivity in SEE”, 2016

⁹⁵ EU progress report 2020

Although some improvements have been made in recent years, **air pollution in the Western Balkans Region remains a serious concern in its urban and industrial areas.** The main problems include emissions from thermal power and manufacturing plants, traffic, domestic heating, and mines. The impact of energy generation and consumption on the environment is an important factor influencing energy choices in the region, given accession aspirations by the Regional Parties⁹⁶.

Under the Ambient Air Quality Directives, EU Member States have to comply with air quality standards for a number of pollutants harmful to human health, including limit values for nitrogen dioxide and particulate matter (PM₁₀ and PM_{2.5}). **In over 25 cities located in the Regional Parties, limit values for one or more of these pollutants have been exceeded for many years,** with significant consequences for public health and the economy⁹⁷. Transport remains one of the key factors contributing to air pollution (Figure below).

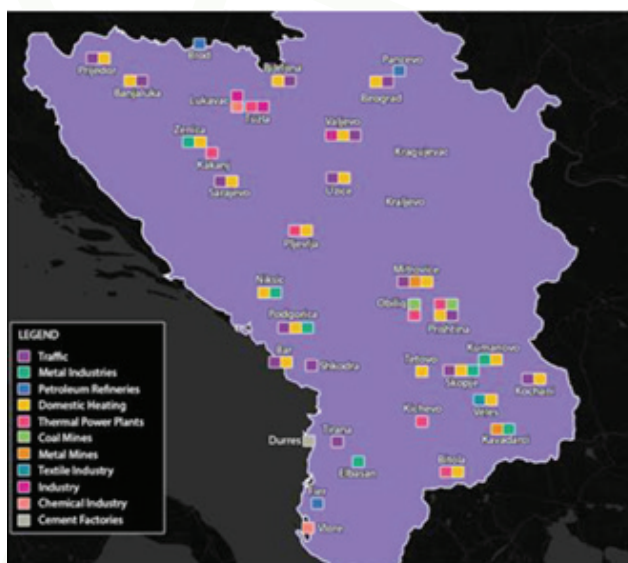


Figure 12. Emissions sources in Western Balkans⁹⁸

The Transport Community Treaty does not entail provisions related to urban transport as this is usually under the responsibility of local governments. However, **transport policies and financial support should also reflect the importance of urban mobility for the overall functioning of the TEN-T**, with provisions for first/last mile solutions that include multimodal mobility hubs, digitalisation, park-and-ride facilities, and safe, active mobility infrastructures. In this regard, the issue of urban transport affects overall regional connectivity.

One of the main issues in urban areas is traffic congestion which impacts the environment, economy, and general society. The number of kilometres of road dedicated exclusively to public transit per 100,000 population and number of kilometres of bicycle path per 100,000 population is considerably low in cities of the region (e.g., Tirana, Skopje, Sarajevo⁹⁹). Cycling, walking and micromobility provide alternatives which reduce congestion; contribute to lower carbon pollution; help economic growth; positively impact

⁹⁶ Čolović Daul, M., Kryzanowski, M. and Kujundžić, O., "Air Pollution and Human Health: The Case of the Western Balkans" 2019

⁹⁷ Banja M., Đukanović G., Belis C.A., "Status of air pollutants and greenhouse gases in the Western Balkans: Benchmarking the accession process progress on environment", 2020

⁹⁸ Čolović Daul, M., Kryzanowski, M. and Kujundžić, O., "Air Pollution and Human Health: The Case of the Western Balkans" 2019

⁹⁹ EBRD, Green cities action plan for Tirana, Skopje, Sarajevo



human health; and promote sustainable tourism. Public transport is one of the most cost-efficient ways to decarbonise people's daily mobility in the region and is still the primary mode of transport in many regional urban areas such as Skopje with 34 per cent¹⁰⁰ share, Tirana 36 per cent (bus)¹⁰¹, and Sarajevo 55 per cent¹⁰², however it is seeing a decline due to outdated fleets and equipment, unavailability of timely and accurate information services and inconvenient ticketing systems, and a lack of funding. One more issue preventing decarbonisation of urban areas and influencing competitiveness is the lack of harmonisation within Urban Vehicle Access Regulations (UVARs).

Urban logistics is an integral part of urban mobility. This industry has been developing rapidly, especially during the COVID-19 pandemic, and presents key factors to support growth of the cities' economic activities. On the other hand, it is a contributor to congestion, pollution and road accidents. Multimodal integration of urban logistics, including the use of zero and low emissions vehicles, urban rail, and inland navigation is important to create reliable and sustainable alternatives to road only solutions, thus contributing to a strong, resilient, and integrated transport system.

The Urban Mobility Package of 2013¹⁰³, including sustainable urban mobility plans (SUMPs) have been developed by the EC to support cities to improve their urban mobility. There are several initiatives in the region aiming to make its cities more sustainable, such as the EBRD Green cities programme that has been developing Green city action plans for the region's cities, (e.g Banja Luka, Sarajevo, Skopje, Tirana etc.) that include a transport and mobility component and identifies clear actions. Additionally, under the regional "Sustainable Urban Mobility in SEE Countries II" project, with the help of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Sarajevo and Tirana have developed SUMP in 2020¹⁰⁴. Furthermore, there is an on-going procedure for engaging consultants to prepare the Sustainable Urban Mobility Plan for Skopje, financed under IPA 2 (national envelope). The tender was launched in 2020 and the consultant is expected to start work in the 4th quarter of 2021.

INTERURBAN TRANSPORT

The usage of rail transport over long distances in the region is not on a satisfactory level. **The passenger modal split¹⁰⁵ in the region is far behind the EU-28 average because of several influencing factors.** To decarbonise transport, improvement of the rail system is crucial.

100 Source: <https://civitas.eu/content/skopje>

101 EBRD, Green City Action Plan of Tirana", 2018

102 EBRD, Green Cantonal Action Plan for Sarajevo, 2020

103 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Together towards competitive and resource-efficient urban mobility COM (2013) 913 final. It should be noted that an evaluation of the UMP, where UVARs are also considered, will be accomplished by the end of 2020

104 Source: <https://seechangenetwork.org/sustainable-urban-mobility-plans-sumps/>

105 Eurostat, "Statistical Pocketbook 2020, EU Transport in Figures", 2020.

Table 4. Modal split of passenger transport on land 2018¹⁰⁶

Modal split of passenger transport on land (passenger-km in per cents)				
	Passenger cars	Buses and coaches	Railways	Tram & metro
EU-28	81.8	8.5	7.9	1.7
Montenegro	96.4	2.3	1.3	-
North Macedonia	84.8	14.5	0.7	-
Albania	89.2	10.8	0.0	-
Serbia	72.5	25.1	0.8	1.6

Due to the COVID-19 pandemic, passenger (road, air, and rail) transport was suspended, however in comparison to the other two modes, rail showed itself to be most resilient, due to its limited number of players and more controlled system. **As a rule, railways are not as competitive due to its limited number of train connections (Table 5).**

There are several potential factors influencing railway competitiveness:

- Improper Route Path (too many stops on the route).
- Infrastructural bottlenecks (maintenance, average speed, etc.).
- Procedures at Border crossings (custom, police, inspection etc) – 90 mins.
- Interoperability of infrastructure and rolling stock (cross border vehicle approval).
- Digitalisation of different railway processes.
- Insufficient investments/funds.
- Alternative possibilities for transport. (Highway along the whole distance (i.e. Belgrade-Skopje) vs double track on half of distance (Belgrade-Nis).
- Capacity and availability of rolling stock.
- Reliability of timetable.
- Quality of service.
- Lack of financial sustainability.
- Absence of reforms as a summary of all reasons mentioned above.

Table 5. Travel time overview between Western Balkans major cities¹⁰⁷

Route	Distance (km)		Travel time (hrs)	
	Rail	Road	Train	Bus
Belgrade – Skopje	400	435	11	6 - 7.5
Belgrade – Zagreb	423	395	6.5	5 - 6
Belgrade – Bar	476	485	11	9.5 - 11.5
Skopje – Pristina	93	96	3	2 - 2.5
Tirana – Podgorica	166	180	n/a	4
Sarajevo - Zagreb	450	390	10 (2007)	6.5 - 8
Belgrade - Sarajevo	400	310/380	8 - 9.5 (2011)	6.5 - 7.5
Belgrade - Pristina	388	350	n/a	5.5 - 6.5
Belgrade - Kosovo Polje - Pec	388	350	10 (1999)	5.5 - 6.5

¹⁰⁶ Eurostat, "Statistical Pocketbook 2020, EU Transport in Figures", 2020.

¹⁰⁷ Websites of railway companies and bus operators



Figure 13. Rail connections between capitals in the Western Balkans

The entire network has not yet reached compliance with TEN-T standards and is under the stipulated level. The maintenance gap is the main reason for the low performance of the rail, and passenger transport systems. This lack of maintenance has affected infrastructure performance possibilities and has resulted in a lowered operational speed compared to the designated speed, impacting reliability and punctuality of rail travel, higher operational costs for its undertakings and ultimately impacting competitiveness.

There have been plans to develop High Speed Railways but so far, **the Western Balkans region does not have any developed High-Speed Rail Lines.** Serbia is in the process of constructing a 180 km line between Beograd and Subotica. This line will be available to high-speed passenger and freight trains operating between Belgrade and Budapest. Given the geography of the region, the proximity of large urban centres and the population density, the introduction of the High-Speed railway lines across the region will need to be more thoroughly examined to show its benefits and costs.

Balkans region.

Currently the average operational technical speed on the perceived part of Corridor X equals 75.94 km/h, which represents 68 per cent of the average design speed. Instead of building new high speed rail lines, significant improvement in speed and travel time can be made by upgrading to design and operational speed of 120 km/h. On the example of corridor X, 185 km will need to be upgraded from 80 km/h design speed to 120 km/h design speed, and 554 km revitalised up to the design speed.

In this case, the technical speed from 75.94 km/h will grow to 120 km/h and instead of technical travel time of 10h and 24min, the technical travel time of the train will be 6h and 35min which is substantial time saving of approximately 37 per cent and it brings competition advantage to the rail transport for passengers and for freight. If we additionally consider the cost of construction vs. reconstruction, the operational track occupancy for mixed traffic (passenger and freight) than the benefits of the high-speed track are not that higher compared to the full revitalisation of the network for far less investment and time needed.

Corridor X condition overview (Subotica – Gevgelija)

Station Name	Station Name	RP Code	Length (km)	Designed Speed (km/h)	Operating Speed (km/h)	Axle Load (kN)	Train Length (m)
Kelebija	Subotica	RS	8	120	50	225	594
Subotica	Novi Sad	RS	98	120	50	225	492
Novi Sad	Stara Pazova	RS	41	120	80	225	599
Stara Pazova	Novi Beograd	RS	30	120	50	225	554
Beograd	Novi Beograd	RS	5	80	50	225	506
Beograd	Resnik	RS	14	80	70	225	508
Resnik	Velika Plana	RS	76	120	85	225	647
Velika Plana	Lapovo (right)	RS	19	120	100	225	642
Lapovo	Stalac (right)	RS	67	120	65	225	530
Stalac	Nis	RS	67	120	85	225	490
Nis	Doljevac	RS	18	120	70	225	580
Doljevac	Presevo	RS	131	120	60	225	572
Tabanovci	Kumanovo	RS	19	120	120	225	550
Kumanovo	Trubarevo	RS	30	120	100	225	550
Trubarevo	Veles	MK	51	80	80	225	550
Veles	Gevgelija	MK	115	100	100	225	550
		TOTAL	789	Avg: 111.25	Avg: 75.93		



5.1.4. FLAGSHIP 4 – FREIGHT TRANSPORT

The European Green Deal states that: “Multimodal transport needs a strong boost. This will increase the efficiency of the transport system. As a matter of priority, a substantial part of the 75 per cent of inland freight carried today by road should shift onto rail and inland waterways”.¹⁰⁸

Multimodality refers to the use of different modes of transport on the same journey. The concept applies to both freight and passenger transport and, in both cases, can now be driven on by the growing trend towards digitalisation. Multimodality takes advantage of the strengths of the different modes, such as convenience, speed, cost, reliability, predictability, and in combination, can offer more efficient transport solutions for people and goods. This will help ease the pressure on Western Balkans’ congested transport infrastructure, and make the whole sector more environmentally friendly, safer, and cost efficient.

FREIGHT MULTIMODALITY ASPECTS

Currently, transport in the region is dominated by road, and the development of multimodal transport is at an early stage. **The region has not yet started developing its policy, institutions, and legal or regulatory framework in this area.** There are several reasons for this, such as inadequate infrastructure and connections to terminals, lack of adequate incentives promoting environmentally friendly modes, insufficient cooperation and information sharing among the participants in the supply chain, and inadequate legal framework.

In terms of developing integrated logistics strategies that promote an international corridor approach and multimodal solutions, **none of the Western Balkans’ economies have a dedicated, comprehensive multimodal and logistics strategy.** However, majority of their national transport strategies include elements of multimodal and logistics improvements, such as: plans to enhance transshipment facilities in the region, for example, the creation of new intermodal and logistics terminals in North Macedonia (Trubarevo), Albania (Durrës), Bosnia and Herzegovina (Doboj and Banja Luka), Kosovo (Miradi), Serbia (Batajnica and Belgrade) and Montenegro (Bijelo Polje and Podgorica).

Case study: Developing intermodal terminal in Batajnica (Belgrade)

The bulk of inland freight in Serbia is transported by rail, with the Serbian railway network catering to most domestic and international freight operators active in the region. Rail freight accounts for about 3,000 million tonne-km, compared to 2,800 million tonne-km by road and 700 million tonne-km on inland waterways.

Belgrade stands on a crossroads, connecting Corridor X, it's branch Xb connecting Belgrade to Budapest and Route 4 which connects port of Bar in Montenegro to Belgrade. Through these corridors, Belgrade is connected to prominent regional ports such as Piraeus and Thessaloniki in Greece, Rijeka in Croatia, Bar in Montenegro, and Koper in Slovenia, making Belgrade geographically suitable for hinterland intermodal terminals.

There are three partly developed intermodal terminals in Serbia: one near the central railway station in Belgrade (the ZIT /Railway Integral Transport), with a capacity of 10,000 TEU/year; a second in the port of Belgrade, 12,000 TEU/year; and a third in the port of Pancevo, for up to 5,000 TEU/year. There are no rolling road terminals or terminals for the transshipment of freight from and to large vessels (Ro-Ro) in Serbia. However, some facilities are in place in ZIT and in the ports in Novi Sad, Belgrade, Pančevo and Prahovo which would allow for Ro-Ro transshipment.

To improve freight efficiencies and capacities, Serbia decided to construct an intermodal terminal in Batajnica, Belgrade, with rail access, road access, a storage area for intermodal transport units, buildings for the terminal operator and customs authority, and parking places for road freight vehicles.

The new terminal in Batajnica will be in the main industrial/service area of Belgrade, at the crossroads of major international combined transport routes. The existing railway lines going through Batajnica are an integral part of the Orient/EastMed Corridor (CX). The terminal will be able to accommodate 80,000 TEU/year, with the possibility of adding capacity if needed.

The investment will facilitate domestic and international freight trade, regional integration and sustainable growth and thus have a positive impact on the broader economy of Serbia. Additionally, construction of an intermodal terminal will help reduce CO₂ emissions by enabling modes of transport with lower fossil fuel consumption.

The investment in Batajnica has been financed by EU contribution (89 per cent of total investment) and the Serbian budget and is part of other EU-funded actions aiming to improve connectivity in the region along core network corridors of the Trans-European Transport network.

Source: WBIF project fiche, Orient/East-Med Corridor (CX): Intermodal Terminal in Belgrade, Serbia



There is no legal instrument to enhance the position and incentivise the development of freight multimodal transport. A directive on Combined transport has not been transposed in most of the Regional Parties. In Montenegro, the legislation on combined freight transport from 2014 remains the main legal framework, but significant efforts are still needed on implementation and enforcement, especially on incentives to road users and the establishment of intermodal terminals.¹⁰⁹ For the past two years, only Serbia has been allocating funds to promote the development of combined transport, while in other Regional Parties', a system of incentives has not been put in place.

Regarding infrastructure, **all river ports and seaports included in the Core Network are mostly compliant with the TEN-T standards**, having an existing rail connection, though not all terminals within one port are connected to rail networks (for example Durres port)¹¹⁰. Availability of clean fuels (a TEN-T requirement) is still lacking in ports. Additional problems are that certain sections which present physical infrastructural bottleneck for container transport such as the Ivan tunnel and Bradina ramp on the railway in Corridor Vc in Bosnia and Herzegovina, prevent shipments of 40 ft and high cube containers, and piggyback shipment of trucks along this railway corridor.¹¹¹

RAIL FREIGHT

Based on technical capacity constraints, the REBIS study from 2015, aimed to identify, whether an intervention was required to alleviate a bottleneck and if so, what type of intervention; and when it would be required. The railway traffic in 2015 and 2030 traffic projections were assessed against the capacity of the Western Balkans Comprehensive Railway network to identify bottlenecks. This was carried out for both the low/moderate and moderate/high economic growth scenarios. Based on the average speeds and temporary speed restrictions on the regional network, it was concluded that it had significant problems and limitations in terms of the quality of infrastructure. The analysis, however, focused on the capacity of the network under the assumption it was functioning under reasonable conditions.

Four categories of constraints were used:

- Rail sections with **no capacity** constraints related to infrastructure. These rail sections referred to links with less than 40 per cent utilisation, thus no improvements were needed.
- Rail sections with **minor capacity constraints**. Minor capacity constraints in infrastructure that could be improved with some minor rehabilitation and minor improvements. These were assumed to be links with an average of 40 - 65 per cent utilisation.
- Rail sections with significant capacity constraints. Significant capacity constraints in infrastructure that needed major upgrading. These were links with 65 - 80 per cent utilisation.
- Rail sections with **major capacity constraints**. Major capacity constraints in infrastructure that would require upgrading based on engineering technical capacity standards and the construction of new lines: links with above 80 per cent utilisation.

109 EU Progress report 2020

110 WBIF, "Western Balkans Investment Facility Infrastructure Project Facility Technical Assistance 5 (IPF 5) - Connectivity Networks Gap Analysis Update Final Report, 2020

111 EU Progress report 2020



Figure 14. Identified Current Bottlenecks on the Western Balkan Comprehensive Rail Network¹¹²



Figure 15. Identified Future Bottlenecks on the Western Balkans Comprehensive Rail Network for the Low/Moderate Economic Growth Scenario¹¹³

For the low/moderate economic growth scenario, Figures 13 and 14 present the maps of the SEETO Comprehensive Railway Network, displaying current and future capacity constraints, respectively. For the moderate/high economic growth scenario, Figure 15 presents the map of the SEETO Comprehensive Railway Network, showing future capacity constraints.

¹¹² World Bank, "The Regional Balkans Infrastructure Study (REBIS) Update", 2015

¹¹³ Ibid



Figure 16. Identified Future Bottlenecks on the Western Balkan Comprehensive Rail Network for the Moderate/High Economic Growth Scenario Inland waterways¹¹⁴

The Regulation (EU) No. 913/2010 concerning the European rail network for competitive freight became effective on 9 November 2010. This Regulation required European Member States to establish international market-oriented Rail Freight Corridors (RFCs) to meet three main challenges:

- Strengthening co-operation between Infrastructure Managers (IMs) on key aspects such as the allocation of paths, deployment of interoperable systems and infrastructural development.
- Finding the right balance between freight and passenger traffic along the Rail Freight Corridors, giving adequate capacity for freight in line with market needs and ensuring that common punctuality targets for freight trains are met.
- Promoting intermodality between rail and other transport modes by integrating terminals into the corridor management process.

Since only Serbia is part of the RFCs and traffic does not usually start and end on RFC exclusively, the need for efficient and harmonised cross border rail transport requires extended involvement of the Western Balkan parties as well.

Regarding rail fleet capacities, there is an evident gap of modern and efficient rail fleet which can accommodate the shift to rail since most of the traction and wagon capacities in the Western Balkans are almost outdated and not aligned with current economic needs.

The infrastructure conditions of the TEN-T Comprehensive and Core networks directly determine the possibility for a quality and efficient rail freight transport. This is especially related to the operating speed of the trains. Therefore, 471 km, or 19 per cent of the Core and 12 per cent of the Comprehensive network, is compliant with the TEN-T compliancy indicator that the operating speed be 100 km/h or higher.

114 World Bank, "The Regional Balkans Infrastructure Study (REBIS) Update", 2015



INLAND WATERWAYS

The Sava and Danube rivers are important to inland waterways in terms of the extended TEN-T network in the Western Balkans. The Sava River is classified as an international waterway (class IV) from the border of the Republic of Serbia (211 km) to Sisak (594 km). **Currently, the Sava waterway does not meet the required navigation** parameters of class IV classification in all the sections and does not allow for smooth navigation on 300 days per year for vessels with a maximum draft of 2.5 metres.

In view of the continued recovery of the economies in the region, it is obvious that the **need for waterway transport rehabilitation on the Sava River has become particularly important** because of its contribution to economic growth, and its potential to be an environmentally friendly and sustainable mode of transport. Future investments should aim to upgrade the Sava River waterway to navigability Class IV along its entire route.¹¹⁵

Despite the advantages of inland waterway transport in comparison with other transport modes, competitiveness of this mode is still low compared to road or rail. This is also reflected in the Serbian Danube sections. The reasons are mostly related to lack of reliability of the waterway infrastructure and existing bottlenecks – such as insufficient fairway depths and widths, or outdated infrastructure in mooring places or at locks. These obstacles usually have an international dimension due to average transport distances along the Danube. Significant progress has been made in the last several years with Serbia's participation in the connecting Europe Facility projects, addressing rehabilitation and the upgrade of the Iron Gate I navigational lock. Further progress is expected to be achieved through project Fairway works, approved for financing from CEF, which will run from July 2020 to April 2024.

One of the partners in the project is the Serbian Ministry of Construction, Transport, and Infrastructure, (Directorate for Inland Waterways). Through this project, multiple objectives will be achieved. These include monitoring and inventory of navigational and environmental parameters along the common Croatian and Serbian Danube stretch, providing a model for future works interventions to tackle navigational bottlenecks on the common Croatian and Serbian river stretch of the Danube, and specification of new functionalities of the transnational Waterway Monitoring System.

Regarding the fleet, many vessels currently operating on the European waterways, including the Western Balkans, were built more than 30 years ago. Almost the entire fleet is equipped with diesel combustion engines and diesel-powered electrical generators to provide electrical power on board. Environmental performance can be improved by using alternative propulsion systems and alternative fuels.

The readiness of the sector to proactively invest in new and enhanced power supply systems is rather low, since most owners will not replace an engine that is still functional. Alternative propulsion systems are still a widely discussed topic in the Inland Waterways sector. The most common alternatives for diesel are Liquified Natural Gas (LNG) and hydrogen. Considering the current diesel fleet, it is highly likely, that we will see a combination of different systems coexisting, each fit for a designated purpose.¹¹⁶

115 Danube Strategy – Mobility/Waterways, project Reconstruction of the critical part of the Sava River waterway in the section Jaruge – Novi Grad
116 UNECE, “White Paper on the Progress, Accomplishments and Future of Sustainable Inland Water Transport”, 2020



MARITIME DIMENSION

Motorways of the Sea (MoS), according to the maritime dimension of the TEN-T policy, is crucial for further decarbonisation of transport and the modal shift. MoS also serves as a functional maritime junction between the major nodes of the core and comprehensive networks and should therefore be seen as an integral part of TEN-T and its corridors. This includes extending the TEN-T network to the Western Balkans and the core Maritime ports, namely the ports of Bar in Montenegro and Durres in Albania. Moreover, it has a key role to play in the decarbonisation of the European economy, by supporting environmental efforts through innovation and road decongestion. By fostering the integration of digital technologies, it helps to ensure a smarter, more efficient, and more competitive maritime sector.¹¹⁷

Participation of neighbouring countries is possible in MoS projects and several positive examples of MoS projects including parties outside the EU, financed by the Connecting Europe Facility call (in 2014 and 2015) have already been successfully implemented. Through support and the facilitation of the Transport community Permanent Secretariat, a more structured and intensified cooperation with the European Coordinator for Motorways of the Sea will be established and participation of core maritime ports of the Western Balkans to future calls and projects under CEF II will be promoted. According to the Smart and sustainable Mobility Strategy, TEN-T support for the Motorways of the Sea has succeeded, seeing more cargo transported more sustainably, through short-sea shipping.

One of the Milestones in shifting more activity towards more sustainable transport modes, is the target that transport by inland waterways and short sea shipping will increase by 25 per cent by 2030 and by 50 per cent by 2050.¹¹⁸ The ports of Durres and Bar can contribute to that ambition by further enhancing cooperation and links through short sea shipping via the South Adriatic ports. The results achieved through the SAGOV project can be a starting point in future endeavours for more efficient links between the South Adriatic ports, including the Ports of Bar and Port of Durres.

According to the EU Smart and Sustainable Mobility Strategy, in terms of alignment with the *acquis* (apart from the existing legislation in the maritime domain), the European Commission is planning to initiate a major review of existing legislation on flag state responsibilities, port state control and accident investigation, together with the continued strengthening of EU rules on recognised organisations. In addition, the mandate of the European Maritime Safety Agency will be modernised and possibly extended to additional areas. These processes will also have to be closely monitored by the Western Balkans Maritime Regional Parties.

5.1.5. FLAGSHIP 5 – PRICING CARBON AND EXISTING INCENTIVES FOR USERS

Currently, transport users cannot easily access information on transport carbon footprint and availability of clean choices. People need to be made aware of the environmental impact of their travel, purchases and day-to-day mobility that will lead to potential travel pattern changes.

117 European Commission (2020), European Maritime Space Motorways of the Sea Detailed Implementation Plan of the European Coordinator Kurt Bodewig Mobility and Transport

118 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee of the Regions: Sustainable and Smart Mobility Strategy – putting European transport on track for the future, COM(2020) 789 final



INTERNALISATION OF EXTERNAL COST

Transport is a key enabling service that contributes to economic growth and satisfies the mobility needs of a country. Yet, **its activities produce negative externalities to the environment and to society**. In the context of pressing environmental and climate challenges, it is important to consider an updated and comprehensive assessment of the external costs of transport.

Western Balkans relies heavily on road transport, and it is expected that a considerable portion of taxes/revenue is collected from road transport (mainly passenger cars). Road freight traffic also causes the most pollution, particularly with an ageing fleet, exacerbating the already high air pollution levels in the region and causing a real concern on road safety, particularly when heavy vehicles use secondary and tertiary parts of the network. **The externalities of road traffic, such as overloading and pollution, are not fully costed in current road user charging mechanisms.**

Regional Parties' instruments are mainly focused on taxes/charges that are directly related to the ownership and use of transport vehicles, including charges related to infrastructural use (to some extent) based on the 'user pays' and the 'polluter pays' principles. Apart from road taxes, the authorities also apply eco/environment taxes, however, it remains uncertain if the use of such taxes serves their purpose.

ROAD USER CHARGING

Albania, Bosnia and Herzegovina, North Macedonia and Serbia have started introducing tolls on their roads. Montenegro has a tolled tunnel in place, and Kosovo is assessing toll introduction in their road network. All systems already in place, while different, are **all distance-based, and potentially interoperable**. Electronic distance-based tolling has already been introduced in four of the Regional Parties.

The application of tolls and vignettes is not mandatory for EU Member States, and a specific provision of the Euro vignette directive allows EU Member States to co-operate for the purpose of introducing a common system of electronic vignettes. The Transport Community Treaty signed by South-East European Parties, includes the following obligations related to Road User Charging of the Road Infrastructure:

- Directive 2004/52/EC of the European Parliament and of the Council of 29 April 2004 on the interoperability of electronic road toll systems in the Community (OJ EU L 166, 30.4.2004, p. 124)
- Commission Decision 2009/750/EC of 6 October 2009 on the definition of the European Electronic Toll Service and its technical elements (OJ EU L 268, 13.10.2009, p. 11)
- Directive 2019/520/EC of the European Parliament and of the Council of 19th of March 2019 on the interoperability of electronic toll systems and facilitating cross-border exchange of toll non-payment information in the Union (OJ EU L91, 29.3.2019, p. 45)

There is a **partial transposition of Directive 2004/52/EC only in Bosnia and Herzegovina and Serbia**. The Road Action Plan¹¹⁹, endorsed by the Regional Ministerial Council on 26 October 2020, set the framework for working towards e-tolling interoperability in the region. The introduction of the European Electronic Toll Service does not aim to replace any national tolling systems or schemes already in place in the Western Balkans region, but involves the need for technical interoperability related to on-board equipment as

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well as positioning and communication technology. **There is a synergy between the Road Action Plan and the Regional Cooperation Council (RCC) led Common Regional Market Action Plan, to establish a regional platform for e-tolling interoperability.**

AVAILABILITY OF INFORMATION TO USERS

One of the main enablers to achieve decarbonisation will be raising awareness among the final consumers of the negative effects of certain modes and providing better information to travellers on the carbon footprint of using certain transport modes/vehicles.

Currently, neither individuals planning a trip, nor shippers/logistics operators organising a delivery have easily accessible information that could help them make sustainable and green choices when planning their trips. The recent Eurobarometer survey¹²⁰ for EU Member States demonstrated that 42 per cent of online buyers would wait longer for delivery if it can be made in a sustainable way and by green modes of transport, while 59 per cent would pick up delivery by themselves at a delivery point. Currently, some of the leading European logistics operators and airlines (e.g. DB Schenker, Kuehne+Nagel, Wizzair etc.) offer possibilities to measure carbon footprint in the Western Balkans region.

However, one of the issues for having a reliable information system is that no specific framework for calculating CO₂ emissions from transport services exists (even in the EU). **The lack of methodologies for measuring and calculating CO₂ emissions from transport, hinders the potential to reliably measure, compare and benchmark various transport services and develop appropriate information tools.**

Transport Observatory. The Treaty establishing the Transport Community includes dedicated provisions in respect to the Transport Community Permanent Secretariat's role in setting-up a Transport Observatory. **The Transport Observatory should become the main information repository in relation to the TEN-T indicative extensions in the Western Balkans**, providing both **real-time data** for the benefit of people and businesses and a solid analytical basis for political and technical decision-making processes that would ultimately strengthen the regional dimension of sectoral strategic planning. It should also aim to become **a regional hub of excellence and a reference guide** for the best transport practices. The Observatory will include an environmental component and will measure progress and trends of environmental indicators, and by this, help decision making processes of the policy makers and focus more on green elements.

The Transport Observatory should basically be built around 4 main pillars:

- The Regional Transportation Model
- The TEN-T Corridors Performance Monitoring Tool
- TEN-T projects monitoring
- EU Acquis transposition and implementation monitoring

To address the above in **January 2021, Transport Community Permanent Secretariat engaged a consultant to develop the Transport Observatory concept and prepared the technical specifications** with the deadline to be finalised **by June 2021.**

120 Special Eurobarometer 495



5.2. SMART MOBILITY CHALLENGES

5.2.1. FLAGSHIP 6 – CONNECTED AND AUTOMATED MULTIMODAL MOBILITY

Digitalisation, automation, and the emergence of a shared, collaborative economy and platforms (which are challenging the current and traditional mobility and transport landscape) will be key for building a smart, green, and resilient transportation system. New ICT technologies, including artificial intelligence (AI), impact the way transport organisations operate. They pave the way for innovation, allow new services and business models to enter the market and challenge the incumbents. Digitalisation also facilitates novel ways of collaboration within and beyond the sector, including between supply chain actors. At the same time, users' behaviour and expectations – for both passengers and businesses – evolve rapidly with demands for more efficiency, less emissions and better performance of the whole transport system.

This rapid transformation can make the transport system more connected, multimodal, and efficient, allowing for a better organisation and execution of travel and transport operations. It can help make better use of infrastructure and resources as well as integrate different modes of transport. It can ultimately make mobility safer by helping reduce safety risks involving human error. It can make transport and mobility more inclusive and cleaner, by, for instance, increasing the use of public, collective and shared transport. Ultimately it can help to better serve both citizens and businesses and positively impact transport emissions¹²¹

MULTIMODAL AND COLLABORATIVE ECONOMY CHALLENGES IN CROSS BORDER AND URBAN CONTEXT

Cross border passenger transport. Digitalisation of transport is taking a slower pace. Solutions related to safety such as ITS in tunnels (Albania, Bosnia and Herzegovina, North Macedonia, Serbia) or VTMS (Montenegro) have been partially implemented. However, smart solutions related to improving mobility for final consumers and improving logistics operations still need to be developed on a regional level. There are still roads to be crossed to achieve interoperable solutions, which can be combined and integrated smoothly along travel/supply chains.

Currently, travellers are still not able to plan and book their trips online, in some cases domestically (for example, rail passenger tickets in Bosnia and Herzegovina, Montenegro, North Macedonia, and Albania) and internationally. From a passenger perspective, each transport mode currently still operates in a mostly isolated system. All current solutions are focused on developing within one mode of transport, rarely allowing for multimodal connections and any integration between different services such as from public transport and rail through to electric vehicle charging and car rentals.

There are many reasons for this; insufficient innovative companies, no legal framework put in place or non-existing standards. Some modes such as railways, have clear standards covered through EU specifications such as the Technical Specification for Interoperability of Telematics Applications for Freight/Passenger Services (TAP/TAF TSI), however, these need to be transposed and implemented.

This also provides an opportunity to the region. If a common framework is agreed and adopted across modes and across the Regional Parties, many of the barriers that come with isolated development, such

¹²¹ European Commission, "Sustainable and Smart Mobility Strategy, Staff Working Document", 2020



as the availability and accessibility of data, legal and commercial barriers ranging from the lack of cooperation between suppliers for payment system interoperability to the existence of different license, insurance and distribution agreements, can be bypassed.

Setting the framework for harmonised, multimodal platforms, will positively influence competition, and bring more operators to international and local levels. This opportunity should be used to enable smooth multimodal experience and, in the beginning, remove all barriers to ticket distribution. For a start, access to and reusing of data needed to develop their services should be enabled, including achieving interoperability at EU levels (data formats, protocols for data exchanges etc.).

Additionally, single ticketing options within urban and intercity areas virtually do not exist on almost all levels: city, national and regional. Progressive solutions such as paying tolls, parking, and other charges in real time and, directly from a smartphone or other device as well as, in simple procedures to access areas are also limited in the Western Balkans.

Cross border Freight transport. The Western Balkans economies need to upgrade their trade and logistics performances to leverage its location and become a hub for regional and global trade. **Bottlenecks at borders or excessive government bureaucracy marked by paper trail are the key factors to why the regions are holding back their economies by trading below their potential.** A one-day delay reduces the export value of most goods by 1 per cent; for agricultural products, it is even by 7 per cent (which is critical for the Western Balkans). The unpredictability at border crossings, lack of coordination along the supply chain, delays in information exchange and necessity for paper trails contribute to high logistics costs estimated at 16 per cent of GDP, compared to about 8 per cent in the EU and the US.¹²²

In the Western Balkans, as is in the whole of Europe, there is a lack of a uniform legal framework requiring authorities to accept freight transport information in electronic form, in addition to a fragmented IT environment. These are obstacles to the simplification and better efficiency of communication between transport operators. A uniformed legal framework and, harmonized digitalisation could help alleviate some of these barriers, reduce transport time, enable more competitiveness of other transport modes and increase regional attractiveness to FDI.

Port to hinterland connections could be better developed on infrastructural connections and information exchange. Additionally, border crossings present sources of delays and long procedures. This presents a complex issue and requires that communication channels between port-hinterland actors, among operational & public (compliance) actors, between the port and the society (e.g., city) and among ports and hinterland corridors of the wider region, be digitalised and paperless. Several Mobility as Service solutions for freight such as sharing of information regarding the facilities and operations of inland terminals and rail/inland shipping operators among the port-hinterland actors or streamlining port-hinterland actor processes using a PCS¹²³ are already available on the market and have been successfully implemented in other European States.

Furthermore, as a part of macroregional programmes (Adriatic and Danube), several studies have been developed (such as ISTEN, ADRIPASS etc) analysing main bottlenecks in freight transport, showcasing best EU examples of port hinterland digital solutions, and providing concrete measures for improvement. The

122 World Bank, "Facilitating Trade and Transport, Action Plan for Western Balkans", 2016
123 ISTEN project, ISTEN past experiences knowledge database, 2018



Regional Parties have actively participated in these programmes so the next step would be the actual implementation and piloting of some solutions.

In the region, these digital solutions have not been developing fast enough, and have been mostly pilot projects implemented on part of the network in one Regional Party, such as logistics performance platform along the Durres-Tirana corridor. This is characterised by the underutilisation of truck transport capacity, high heavy traffic intensity and high accident and fatality rates. The main reasons for the lack of these digital solutions, remains the legal framework, (not having the same standards or IT architecture such as DATEX which would enable secure and fast exchange of information between a wide group of stakeholders) and the lack of innovation culture.

Urban. The TEN-T corridors cross the Western Balkans biggest urban areas (Tirana, Sarajevo, Banja Luka, Belgrade, Skopje, Novi Sad, Pristina, and Podgorica) and majority of long-distance freight and passenger journeys start or finish in regional urban centres. Rapid urbanisation has led to large problems such as: bottlenecks and congestion, road accidents, and environmental pollution. The capitals of the region, have high levels of air pollution, from transport. The question of how to improve mobility while tackling these problems is a challenge faced by all major cities.

Smart and digital multimodality presents a significant factor to offering seamless door-to-door mobility for long distance and cross-border transport as well as for regional and local mobility in urban and suburban areas. **Significant changes in traveller's behaviour contributes to more pressure on the urban passenger transport system** and to the deployment of innovative solutions with various forms of transport services being integrated into a single mobility service which is accessible on demand, including shared and collaborative mobility services (car, bike-sharing, ride-hailing, e-scooters etc.).

Urban and regional freight services have seen significant market penetration of innovative digital solutions such as real -time smart logistics information and fleet management, warehouse automation, electric delivery vehicles and other micro mobility solutions such as e-bikes and scooters. So far digital solutions have been employed periodically, solving individual problems. The next step would be to make possible a framework for data sharing between public authorities, consumers, retailers, and distributors to improve overall system efficiency.

With the development of IT technologies, comes the development of a new concept '**Mobility as a Service (MaaS), which integrates both traditional and innovative transport services into a service accessible on demand.** In practice, a successful MaaS involves many actors (local, regional and national operators, public, private, etc.) putting forward and reassigning available resources to make multimodal travel easier, more efficient, and accessible. One global MaaS solution present in the Western Balkans region is the Moovit application, which provides a real-time vehicle location system for public transport options.

Deployment of MaaS in the region has not caught on at the same speed as in the EU. But this can be used as an opportunity to work, from the start, on issues such as blending services, availability and accessibility to relevant data sets in digital and machine-readable formats, and interoperability of different systems.

Additionally, **with the emergence of online platforms (e.g Car:Go), the lines between private hire vehicles and taxis are blurred.** On demand passenger transport has been disrupted and is being run by global companies using advanced technologies, alongside local competitors. However, this process has not been



without tensions, such as strikes and different national legislative responses. Compliance with as many regulatory regimes as the cities they want to serve in, is a barrier to developing a single market for these players. Another thing to consider is removal of obsolete rules for taxis such as pick-ups/ collection points in specific geographical areas, which limits the competitive power of taxi services and causes unnecessary emissions.

Case study: entry of ridesharing mobile app for taxi market in Belgrade

Car:Go is a ridesharing mobile app based in Belgrade. It provides customers with quick access to a car for their next ride, but it also allows them to make entirely cash-free mobile payments. Car:Go was established in 2015 and disrupted the car rides sector in Belgrade. With limited funding and dependent on internal bootstrapping, the company has managed to become one of the pioneers in the Balkans for securing cheap, on-demand rides alongside easy-to-use mobile payments.

According to the company, current stats ca. 4,000 service providers, and around 600 partnering companies., Car:Go also offers green mobility options, and have hybrid and electric cars in their fleet and, are promoting decarbonisation.

The entry of the IT company into the Serbian market was followed by protests by licensed taxi drivers and companies in Belgrade, who questioned the legality of these services and asked for a ban on Car: Go. However, Car:Go has been a catalyst for digitalisation of the taxi service in Belgrade, which has resulted in the creation of mobile apps by almost all bigger taxi providers and ultimately provides a better and more transparent service for final customers.

Source:

<http://superfounders.com/amp/2016/05/serbian-startup-cargo-is-taking-over-the-balkans/>

<https://appcargo.com/en/kompanije-2/>

<https://www.bbc.com/serbian/lat/svet-49998886>

Innovative technologies have become a reality even in the Western Balkans sector, but this has not been followed by appropriate regionally harmonised legislations as there is no specific EU legislation for services or intermediary platforms related to taxis, road e-scooters or bikes. As a result, national governments and cities struggle to develop appropriate legislation or to apply existing laws while businesses avert legal clarity. The recently updated Sustainable Urban Mobility Planning guidelines take these new developments into consideration but do not constitute a binding legal framework.

IMPLEMENTATION OF ITS AND TRANSPOSITION OF EU STANDARDS

ITS deployment has the potential to revolutionise the way we move and travel in the Western Balkans. Currently, it is limited to road sections and tunnels that are newly constructed or currently under construction, railway upgrade/modernisation projects underway, River Information Services established on the Danube and partly on the Sava River, and to the Vessel Traffic Monitoring Information System established in Montenegro, (also partly implemented).

The trend of the development of ITS in the Western Balkans is characterised by great interest and the proliferation of standalone ITS projects. Deployment of ITS is uncoordinated on a regional level as well as within each Regional Party and has been developed separately for every mode, usually with insufficient collaboration and coordination.



Road. ITS deployment in the region's road network is still patchy, project based and lacking strategic approach. The need for an established strategic framework and the adoption of EU ITS Architecture and standards have been recognised as key issues to ensure interoperability across the region. The **Road Action Plan addresses the above by including concrete actions on how to firstly set up the strategic framework in terms of legal and strategic basis.** After the completion of the strategic framework, deployment of ITS on the Indicative Extension of Road Core/Comprehensive Network in Western Balkans has been estimated at circa € 775 million for implementation costs, and operations and maintenance costs at circa € 1.5 million.¹²⁴

Overall, ITS deployment has been mentioned (to some extent) within the Regional Parties Transport Strategies but not sufficiently enough to be considered as an implementation of Directive 2010/40/EU or any of its parts. **Directive 2010/40/EU is not fully transposed in any of the Regional Parties**, nor has any institutional framework been completed for the creation of ITS architecture.

Recently, with the support of the World Bank, Trade and Transport Facilitation project, road ITS Strategy has been developed and adopted in Albania in July 2020. During the first half of 2021, preparation will start in North Macedonia and Serbia. An overview of the status of establishing the legal framework needed for ITS deployment is provided in Table 6.

Table 6. Overview of adoption of ITS legal framework in Regional Parties¹²⁵

Regional Parties	Transposition of		
	ITS Directive 2010/40/EU	2004/54/EC – on road tunnel over 500 m in length	ITS Strategy/Action Plan
Albania	Partially transposed	No	Road completed in 2020
Bosnia and Herzegovina	Project specific	Project specific	No
North Macedonia	Project specific	Project specific	Planned during 2021
Kosovo	Drafted, planned to be adopted during 2021	Project specific	No
Montenegro	Planned during 2021	Project specific	Planned during 2021
Serbia	Partially transposed	Project specific	Planned during 2021

While in Europe issues concerning the legal framework and deployment of connected and automated mobility is playing an important role in achieving the shift towards green and digital, the Western Balkans are far from considering such issues within their strategies. In years to come this will require a leapfrog from the Western Balkans to match EU development.

Inland waterways. Regarding RIS, in Bosnia and Herzegovina there is currently no deployment, neither a single RIS authority nor an authorised agency/ directorate in charge of inland waterways and navigation across the entire BIH territory. There is need for a wide range of training/ education of operators as well as of users to promote services and prepare stakeholders for the next stage of process development.

¹²⁴ CONNECTA, "Final Report on Strategic Framework for Deployment of ITS in Western Balkans", 2018

¹²⁵ CONNECTA consortium, "Strategic Framework for implementation of ITS on TEN-T Core/Comprehensive Network on the WB6, Final report", 2018



A bilateral agreement is in force between Bosnia and Herzegovina, and Croatia for marking the waterway of the Sava River, defining the responsibilities of both parties, as well as an agreement on navigation on inland waterways and its maintenance, of the common sector of the Sava River with Serbia. Precise rules and procedures on all aspects of RIS implementation (deployment, maintenance, minimal architecture, mandatory usage) do not exist. There is room for better cooperation with neighbouring countries, particularly with Croatia on the common sector of the Sava River.¹²⁶

In Serbia, implementation of RIS was synchronised with existing European standards and full deployment of RIS and the EU RIS Directive (2005/44/EC) was completed in a harmonised way with the Danube riparian countries, especially in terms of fulfilling the EU RIS Directive requirements, including the border regulations ensuring compatibility with neighbouring countries. The future actions regarding RIS in Serbia, will also have to be targeted towards the preparation and deployment of RIS on the entire IWW system Danube – Tisa – Danube.

Maritime. According to the available data, in Albania, VTMS has not yet been implemented. Efforts are still needed for the completion of the institutional and legislative framework. The required interventions concern institutional/ legal, organisational, and technical aspects that would lead to proper implementation of VTMS¹²⁷. Governmental structures in Albania are committed to continue their efforts for VTMS implementation and progress is expected in the coming years.

In Montenegro, VTMS has been partially implemented. Required interventions concern institutional/ legal, organisational, and technical aspects that would lead to proper implementation of VTMS and of other systems in the future.

During the first phase, VTMS sensor equipment was installed (radar, VHF transceivers, radio goniometers, AIS equipment, meteorological radio links, and diesel generators) at the locations of Mavrijan (Ulcinj), Crni Rt (Bar) and Obosnik (Herceg Novi). Server equipment was installed at the Coastal Station of Dobro vodo. The second phase of the VTMS will include the missing sensors (cameras) at locations where VTMS equipment from Phase I project have been installed (Mavrijan, Crni Rt and Obosnik). Furthermore, new equipment will be installed at Boka Kotorska locations (radars, cameras, and radio links) and Skadar Lake (radar, cameras, VHF transmitters and radio links). Preparation of tender documentation and the process of initiating tender procedures have started and tenders shall be launched in the second quarter of 2021.

When it comes to Directive 2010/65/EU of the European Parliament and of the Council of 20 October 2010 on reporting formalities for ships arriving in and/or departing from ports of the Member States, the directive will be partially transposed through the Law on amendments to the law on maritime safety whose adoption is planned for IV/Q 2022.

Border crossings. An element for connected mobility is the inter-connection of the various systems for cross-border trade. All Custom Administrations in the region use a System for Electronic exchange of Data (SEED) through which they exchange pre-arrival data in risk analysis or prioritising certain consignments (as per the agreed list of priority goods on the Western Balkans Green Lanes). A planned SEED+ system is expected to be installed on additional intra-Western Balkans border crossing points and to be used by other border agencies (phytosanitary and sanitary inspections). Such a system between the Western Balkans and EU Member States will ease the implementation of the EU-Western Balkans Green Lanes initiative.

126 CONNECTA consortium, "Strategic Framework for implementation of ITS on TEN-T Core/Comprehensive Network on the WB6, Final report", 2018

127 CONNECTA consortium, "Strategic Framework for implementation of ITS on TEN-T Core/Comprehensive Network on the WB6, Final report", 2018



Serbia and North Macedonia apply NCTS (National Common Transit System) so their transit procedure is fully automatised as they use an electronic transit declaration. In addition, by 2025, with the support of the World Bank, Albania, North Macedonia, and Serbia are expected to have a National Single Window (NSW) in place. This will be a comprehensive, easy to use system which will allow full electronic submission by traders, and automated processing and issuing by all agencies of all documents (licenses, permits, approvals, decisions), required to complete foreign trade transactions. This should lead to the simplification of import, export, and transit procedures as well as cost saving, greater efficiency, and transparency.

The European Rail Traffic Management System (ERTMS) is a completely new concept in railways for the Western Balkans. To implement the ERTMS/ICT system, the first step is to prepare legislation in each of the Regional Parties. The basis for this new legislation is the implementation of Interoperability in Railways Directives. Currently, institutional (technical, organisational, and operational) barriers prevent freedom of access and seamless cross border activities between rail networks in the region and with the European member states, which are on corridors¹²⁸.

Currently, there are no ERTMS in operation on any of the networks of the Regional Parties. Almost all the parties have partly transposed interoperability directives (third or fourth rail package). Some of them have published a certain number of TSIs but none have been implemented in practice. As for planned projects, in Albania, Serbia, and North Macedonia, there are intentions to implement ETCS level 1 or even 2 on 1,394 km of the Core and 1,629 km of the Comprehensive networks. However, all the Regional Parties need to make additional efforts in further transposition and implementation of interoperability directives. As part of it, the situation regarding ERTMS/ ITS in the Western Balkans region is presented below and the plans for ERTMS deployment are clearly insufficient since these are for only 54.75 per cent of the Core network, and the Community's intention is for the Core network to be fully compliant with TEN-T.

128 CONNECTA consortium, "Strategic Framework for implementation of ITS on TEN-T Core/Comprehensive Network on the WB6, Final report", 2018



Table 7. ERTMS deployment in the Western Balkans region¹²⁹.

Regional Parties	Current situation/ institutional framework	Connection between institutional/ legislative framework and layouts for deployment of ITS/ ERTMS
Albania	Plans for institutional framework (New Law on Railways in 2017 -based on EU Directive, but without By-law acts and Operating rules)	No ERTMS strategy
Bosnia and Herzegovina	Institutional framework exists (Law on Railways -based on EU Directive, but without By-law acts and Operating rules)	Partially, through projects
North Macedonia	Institutional framework prepared (Law on Railways -based on EU Directive, By-law acts, but no Operating rules)	Some, with influence on institutional framework
Kosovo	No institutional framework exists (Law on Railways planned -based on EU Directive, but without By-law acts and Operating rules)	Some, with no influence on institutional framework
Montenegro	No institutional framework exists (no Law on Railways -based on EU Directive, without By-law acts and Operating rules)	No ERTMS strategy, Rulebook on the technical specification of interoperability of the control, command and signalling subsystems based on the Law on Safety, Organisation and Efficiency of Railway Transport.
Serbia	Institutional framework (Law on Railways adopted in 2018 based on EU Directive and By-law acts, but without Operating rules)	Some, through projects

ERTMS deployment plans in the Western Balkans (%)

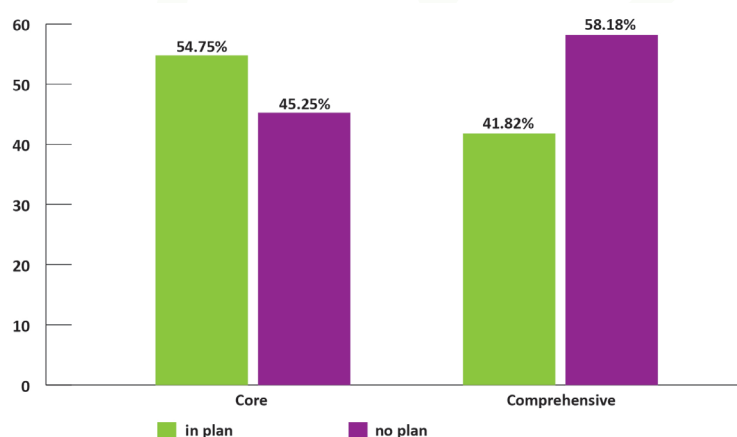


Figure 17. ERTMS deployment plans in the Western Balkans region¹³⁰

129 CONNECTA consortium, "Strategic Framework for implementation of ITS on TEN-T Core/Comprehensive Network on the WB6, Final report", 2018
 130 Transport Community Permanent Secretariat, "Draft Annual TEN-T report 2020", 2021



5.2.2. FLAGSHIP 7 – INNOVATION, DATA, AND ARTIFICIAL INTELLIGENCE FOR SMARTER MOBILITY

Achieving the Green Deal, Green Agenda and Paris Agreement objectives in the field of mobility, making full use of digitalisation and increasing Western Balkans competitiveness cannot happen without research and innovative support. The ‘Western Balkans Regional R&D Strategy for Innovation’¹³¹ Study claims that unleashing region’s innovative potential will generate important economic gains (e.g., investing 3 per cent of GDP into research and innovation will generate a 6 per cent increase of GDP and a 13 per cent increase in exports). Innovation is important not just for depolluting transport but also for overall economic progress of the region.

INNOVATIVE CAPACITY IN TRANSPORT AND PLANS TO DEPLOY ADVANCE TECHNOLOGIES

The Western Balkans region has made improvements in terms of innovation performance in the last ten years. However, this is still well below other European regions and innovative efforts should be enhanced. **While its economies are at different stages in the formation of research and innovation (R&I) policy governance systems, national research and innovation policy frameworks are continuously being improved.** The enhancement of governance in R&I has come as the result of increased capacity building activities in the region, in addition to the real needs emerging from social and economic transformations.¹³²

Previously, the Western Balkans governments have been questioned about economic growth and improving competitiveness, but less so through using R&I to achieve broader societal goals. On the other side, European Commission has prioritised research and innovation as main tools to improve competitiveness of the continent in the long term. Subsequently, accession aspirants across all economies in the region have proposed reforms to modernise their policies and structures in support of research, technology, and development.

One of the main instruments for research and innovation in transport in the Western Balkans, has been macroregional programs, namely the Danube and ADRION programs and its predecessor (SEE programme). The Danube programme tackles common challenges related to environmentally friendly (including low-noise), low-carbon and safe transport systems together with inland waterways & ports, and multimodal links which contribute to sustainable regional and local mobility, and modal integration and intelligent transport.¹³³ The total budget allocated for transport has been around € 30 million combining ERDF and IPA funding and envisaged to be distributed to both the Western Balkans and neighbouring EU Member States for international projects¹³⁴.

The ADRION programme, is aimed at developing and improving environment-friendly (including low-noise) and low-carbon transport systems in the Adriatic Ionian region, including inland waterways and maritime transport, ports, multimodal links and airport infrastructure, in order to promote sustainable regional and local mobility. The planned budget allocation (Union funds) amounted to € 17.7 million, corresponding to 18 per cent of the total budget. The financial allocation to this Priority is in line with the emphasis placed on connectivity, efficiency and environmentally friendly mobility and transport within all the Regional

131 World Bank, “Western Balkans Regional R&D Strategy for Innovation”, 2013

132 Andonova, E., Boden, J. M., Cetl, V., Diukanova, O., Dosso, M., Dusart, J., Gkotsis, P., Gnamus, A., Kleibrink, A., Kotsev, A., Lavalle, C., Mandras, G., Matusiak, M., Radovanovic, N., Rainoldi, A., Slavcheva, M., Veskovik, M., Hollanders, H., Ndubuisi, G., Owusu, S., Radosevic, S., “Supporting an Innovation Agenda for the Western Balkans: Tools and Methodologies”, 2018

133 Source: <http://www.interreg-danube.eu/about-dtp/programme-priorities>

134 Cooperation programmes under the European territorial cooperation goal, Danube



Parties as a prerequisite for all EUSAIR pillars.¹³⁵

Focus of these programmes in the past have been mostly on developing international cooperation frameworks and improving national capacities. Innovative capacity has been significantly improved in some institutions, however in others such as public companies, there is still much to be done. **Challenges prevent full innovation cycles from policy-based need for research to market deployment.** Through last call, the programmes aim to develop currently innovative pilot projects as the final application of research. This approach, moving from theoretical to more concrete problem solving, has been welcomed in the region. Additional funding has been allocated through Horizon 2020, a financial instrument underpinning the Innovation Union, which is a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. However, so far not many projects from Horizon have been related to transport.¹³⁶

KEY DIGITAL ENABLERS

The transition towards smart mobility, which is more efficient, user-friendly, and sustainable can only happen if the right digital enablers are in place. In this regard, shaping a proper data economy for mobility; analysing available spectrum and needs; or designing a clear framework for using Artificial Intelligence and other breakthrough technologies, should be fundamental pillars of a successful transport transformation.

Data present the basic element for digital transformation. Seamless exchange of data across modes for both freight and passenger will allow for integrated planning, ticketing, and online purchasing; improve utilisation of current capacities, optimise costs, energy consumption and environmental impact. Currently, the Regional Parties have made some progress in digitalising their systems, though data collection and data sharing remains a field which needs improvement and a regionally harmonised approach. There have been sporadic actions and examples related to transposition of ITS directives: planning of ERTMS in several railway projects, RIS deployment on Danube in Serbia, VTMS implementation in the port of Bar or the attempt to extend the EU Galileo Green Lane App allowing for real time visualisation of congestion at European road border crossing points to the Western Balkans. The mentioned projects have contributed to setting up the legal and governance systems and achieving better optimisation on certain sections/ports. However, more needs to be done to interconnect different systems to achieve overall network improvements, such as adopting the EU framework architecture and DATEX standards.

DRONE USAGE, 5G, AUTONOMOUS VEHICLES, ARTIFICIAL INTELLIGENCE

As mentioned above, innovative technologies in the region need to be accepted sooner. This is especially important if greening of transport is to be achieved. **Regional innovative frameworks and capacity need to be improved to faster adopt high potential new technologies currently being piloted,** such as Artificial Intelligence, connected and automated vehicles and drone usage. Currently, there is limited progress on the introduction of connected and automated vehicles and artificial intelligence. Drones have been more in use, primarily for leisure purposes, while some application of drones is finding its place in infrastructural projects (e.g. assessing network conditions). Serbia has even adopted a law regulating flights with drones which requires licences to manage them.

135 ERDF, "Adriatic - Ionian Cooperation Programme 2014 – 2020", 2019

136 Source: [https://cordis.europa.eu/search?q=contenttype%3D%27project%27%20AND%20\(programme%2Fcode%3D%27H2020%27\)%20AND%20\(%27western%27%20AND%20%27balkans%27\)&p=1&num=10&srt=Relevance:decreasing](https://cordis.europa.eu/search?q=contenttype%3D%27project%27%20AND%20(programme%2Fcode%3D%27H2020%27)%20AND%20(%27western%27%20AND%20%27balkans%27)&p=1&num=10&srt=Relevance:decreasing)



For faster digitalisation of transport, it is necessary to ensure fast flow of data. Deploying a 5G network is one of the ways to achieve fast information exchange. Even though its deployment does not lie within the remit of TCT and the Ministries of Transport, it is an important precondition for faster digitalisation. In the region, under RCC and Common Regional Market, focus has been placed on creating a regional digital area. One of the tools to achieve this is the development of a 5G roadmap for the Western Balkans by 2023 and cover at least one main regional corridor with 5G by the end of 2025¹³⁷.

Transposing and implementing proper legislative framework, facilitating the process of implementation of new technologies, along with creating an environment for the private sector to invest, will be key challenges for the region to improve innovation. Additionally, adopting an EU legal framework which will facilitate entry and development of new technologies (drones, AI, connected and automated vehicles, 5G, data sharing etc) is a crucial step to achieving climate neutrality.

5.3. RESILIENT MOBILITY CHALLENGES

5.3.1. FLAGSHIP 8 – THE SINGLE MARKET CHALLENGES

The functioning of a Single Market relies on a dense network of transport infrastructure, highly competitive transport services and a sound regulatory framework to guarantee the highest standards of safety and security, on top of international competitiveness and connectivity. An effective and vibrant internal transport market is vital to driving innovation and entrepreneurship, increasing service quality and lowering transport costs for the benefit of all citizens and businesses.¹³⁸

A single market still needs to be developed in the Western Balkans, and several regional organisations have put different initiatives in place to achieve that. **The Transport Community Treaty is fostering the development of the region's Single Market and aims at creating a Transport Community comprising road, rail, inland waterway, and maritime transport, developing the transport network between the European Union and the six Western Balkan Parties.** In order to make the transition to sustainable and smart mobility and transport truly successful, and the whole system more resilient, specific measures to increase the sector's crisis resilience need to be put in place. These include boosting investment, upgrading the EU transport infrastructure and modernising fleets, (while deepening the Single Market), removing non-physical barriers and providing fair social conditions for workers and, making mobility just and fair for users. All while ensuring that safety and security remain paramount.¹³⁹

OBSTACLES TO A SINGLE WESTERN BALKANS TRANSPORT AREA

Rail market opening, restructuring railway companies, and making them more competitive has been a focus of the regional policy for more than a decade. Despite efforts, the following issues and problems need to be addressed further:

¹³⁷ Common Regional Market (CRM) 2021-2024 Action Plan

¹³⁸ European Commission, "Sustainable and Smart Mobility Strategy, Staff Working Document", 2020

¹³⁹ Commission Staff Working Document, Guidelines for the Implementation of the Green Agenda for the Western Balkans Accompanying the Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions, An Economic and Investment Plan for the Western Balkans, SWD(2020)



- Opening the market at a national level (not fully aligned with the EU Acquis) with hidden discriminatory provisions.
- Establishing/sufficiently staffing/educating institutions (regulatory body, licensing body, national safety authority, national investigation body, designated body).
- Publishing a Network Statement for railway infrastructure every year at the right time in languages prescribed in the EU acquis.
- Publishing a Network Statement for service facilities (sea and river ports, terminals).
- Requiring mutual recognition at regional levels for operating licenses, train driver licenses, safety certificates and vehicle authorisation.
- Modernising rules on public procurement in the rail sector, through transposition and implementation of Regulation 1370/2007 concerning public transport services by rail.
- Putting in place contractual relations between Infrastructure Managers and competent authorities for the maintenance and operation on public infrastructure in most of the Regional Parties. Lack of cooperation between Infrastructure Managers for strategic and operational issues.

TCT Signatories have approved the Rail Action Plan for developing a regional rail strategy in the Western Balkans. The Plan covers 2020-2023 and was developed to tackle the above-mentioned problems. A major obstacle for a single rail market within the region is the interoperability of the rail systems and subsystems. In this regard the region has challenges that need to be addressed in the future to be in line with EU Members States.

Table 8. Rail Reform current state of play ¹⁴⁰

Rail reforms	Albania	Bosnia and Herzegovina	North Macedonia	Kosovo	Montenegro	Serbia
Market opening (domestic level)	Yes	No	No	Yes	Yes	Yes
Transposition of interoperability directive	Yes, partly	Yes, partly	Yes, partly	Yes, partly	Yes, partly	Yes, partly
Institutional framework (Rail Regulatory body, safety body, NIB, etc)	No	Partly, needs better alignment with acquis	Partly, missing NIB	Yes	Yes	Yes
Network statement published	Yes, not regularly	Yes, not regularly (outdated)	Yes, not regularly	Yes, not regularly	Yes, not regularly	Yes, not regularly
Mutual recognition of driver licenses, safety certificates, operational license, and vehicle permit	Partly	Partly	Partly	Partly	Partly	Partly
Multi annual maintenance contracts between government and Infrastructure Manager	No	No	No	No	No	No

140 Transport Community Permanent Secretariat, "Monitoring Progress Report", 2020



Road transport. In July 2020, the European Parliament and the Council adopted the so-called Mobility Package¹⁴¹ which contains social and market rules for the commercial road transport sector, intended inter alia to enhance working conditions for drivers, and eliminate distortion of competition between operators in the sector, by removing notably unfair business practices.

The European agreement concerning the work of crews of vehicles engaged in international road transport (AETR) has been ratified by all the Regional Parties, except for Kosovo.

Road freight transport is regulated in the Western Balkans by two types of permits: ECMT (European Conference of Ministers of Transport) licenses (except Kosovo) that allows hauliers transporting most types of goods through the ECMT countries and, bilateral permits between the Regional Parties themselves and with EU Member States. Distribution of ECMT Multilateral Quota as of 1 January 2021 is provided in Table 9.

Table 9. Distribution of ECMT Multilateral Quota as of 1 January 2021¹⁴²

Regional Parties	No. of annual licenses	No. of short term licenses
Albania	710	360
Bosnia and Herzegovina	1400	0
North Macedonia	1440	2280
Montenegro	610	0
Serbia	2002	0

Road passenger transport by bus and coach is regulated through bilateral agreements between the Regional Parties themselves and EU Member States based on reciprocity, and stipulating travelling routes and timetables.

Green lanes. The insufficient cooperation, coordination, and resources at the border crossing points in terms of both hard and soft infrastructure, management, equipment, and monitoring are significant obstacles affecting the overall connectivity in the region (with the EU Member States neighbouring it). The average waiting time on some WB6-EU border crossing points exceed two hours, and in some cases of up to four hours waiting time has been reported. The Regional Economic Integration Plan (Common Regional Market-CRM) for the Western Balkans which is one of the deliverables of the Western Balkans Summit held in Sofia, aims to create a common market for the region, and integrate it into the EU. The trade and transport facilitation measures proposed in this Plan will further support regional trade and bring economic prosperity. In this sense, border crossing issues are seen to have a high impact as one of the main hindering blocks to the seamless flow of goods across the region, and between the region and the EU.

¹⁴¹ Regulation (EU) No 2020/1054 of the European Parliament and of the Council of 15 July 2020 amending Regulation (EC) No 561/2006 as regards minimum requirements on maximum daily and weekly driving times, minimum breaks and daily and weekly rest periods and Regulation (EU) No 165/2014 as regards positioning by means of tachographs; Regulation (EU) 2020/1055 of the European Parliament and of the Council of 15 July 2020 amending Regulations (EC) No 1071/2009, (EC) No 1072/2009 and 9EU) 1024/2012 with a view to adapting them to developments in road transport sector; Directive (EU) 2020/1057 of the European Parliament and of the Council of 15 July 2020 laying down specific rules with respect to Directive 96/71/EC and Directive 2014/67/EU for posting drivers in road transport sector and amending Directive 2006/22/EC as regards enforcement requirements and Regulation (EU) No 1024/2012.

¹⁴² Source: International Transport Forum



Improving operational logistics and enhancing digitalisation at border crossing points both within the region and between the region and the EU, is therefore one of the priorities of the CRM Plan, the Transport Facilitation Action Plan, and the Green Lanes initiative. The overall objective is to overcome the non-physical barriers, facilitate transport and trade, and achieve a more sustainable mobility and optimised transport/logistic operations which can lead to a reduced impact on the environment.

“Green corridors/green lanes” in the Western Balkans have proved to be effective in delivering essential goods across borders during the pandemic and ensuring continuation of international trade. The green lane concept is an efficient and cost-effective system for cross-border operations within the region and is now being extended between the EU Member States and Western Balkans.

Waterborne transport has many untapped potentials in terms of its contribution to the single Western Balkan transport area. Developing the potential of inland waterway transport is a priority for Serbia and Bosnia Herzegovina, and maritime dimension and short sea shipping is a priority of Albania and Montenegro, (especially in terms of TEN-T network and developing their core ports, Durres and Bar). In terms of ensuring navigability of the Sava and Danube rivers, there are many bottlenecks which will be targeted in future projects. The development of the Action plan for Waterborne transport and multimodality of the Transport Community will contribute to prioritising these investment projects and monitoring their progress. Modal shift, sustainability and digitalisation should be the drivers which will increase the competitiveness of the waterborne sector and thus contribute to the better functioning of cross-border connections and a single western Balkans transport area.

Green elements in national strategies. At present, sustainability and greening of transport has been sporadically mentioned in several national strategic documents, from climate strategies, energy strategies, and local plans, to national transport strategies and specific projects dealing with the issue.

North Macedonia has developed its National Strategy for Sustainable Development which has certain provisions related to transport. Furthermore, the National Transport Strategy (2018) has objectives and actions (Development of Sustainable Urban mobility plans for the main cities to encourage the use of environment friendly vehicles) related to reducing greenhouse emissions. Montenegro in its Transport Development Strategy – Montenegro 2019 - 2035, has put environmental Sustainability as one of its objectives to minimise carbon footprint, noise pollution and the impact on the natural, historical, and socio-economic environment. Specific actions were not developed for this objective and have been addressed through other strategic objectives.

The framework transport strategy of Bosnia and Herzegovina (2016-2030) addresses the environmental and social impacts as their strategic priorities and includes actions (such as monitoring polluting emissions, enhancing modal shift for passenger and freight, and conforming with EU standards on vehicle emissions). Albania`s National Transport Strategy and Action Plan 2016-2020 has mentioned environmental issues (promotion of environmentally friendly transport modes and reduction of transport energy consumption) as specific aims. Currently, Albania (through the EBRD project) is reviewing its national strategy and plans to focus more on sustainability issues. And Kosovo and Serbia are currently in the process of developing transport strategies. The Regional Parties have been preparing GHG inventories, in different years, making it difficult to prepare a regional baseline. Furthermore, the impact of the transport measures and its effectiveness on lowering air pollution and GHG emissions has not been thoroughly elaborated in the region.

DEVELOPMENT OF TEN-T

Improvement of transport infrastructure across the Western Balkans is a key element to ensure connectivity, sustainable economic growth and cohesion among the Regional Parties and European Union and it represents one of the main cornerstones of the Transport Community Treaty¹⁴³.

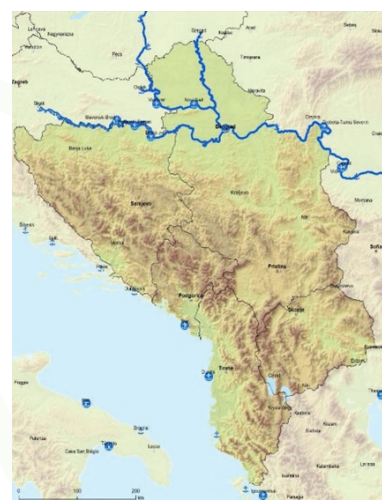
Indicative Extension of TEN-T Comprehensive and Core Networks to the Western Balkans is a multimodal network which includes road, rail, and inland waterway links, together with designated seaports, river ports and airport nodes and terminals. The Core Network is a subset of the Comprehensive Network. The Core Road Network comprises 64 per cent of the Comprehensive Road Network, and the Railway Core Network 67 per cent of the Comprehensive Rail Network corridors and routes.



Comprehensive Network: Railways and airports
Core Network: Railways (passengers) and airports



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



Comprehensive and Core Networks: Inland Waterways and Ports

Figure 18. The indicative trans-European transport network (TEN-T) extension of the Comprehensive and Core networks in the Western Balkans

The Transport network's main purpose is to serve the economic and social development of the region, so it is important that their performance accommodates the increasing demands. **Although significant progress, has been made to develop the Indicative Extension of TEN-T Core and Comprehensive Networks (almost € 11 billion has been invested since 2007) the infrastructure is not fully connected and interoperable, nor is it equipped with sustainable and smart solutions needed to allow climate-neutral mobility.** The TEN-T Regulation establishes guidelines for the development of a trans-European transport network. Many of its requirements are aimed at sustainable, safe, secure, inclusive, and smart transport solutions. In such frameworks, the key concerns related to the performance of infrastructural networks are the current infrastructural conditions and compliance with required TEN-T standards.

Railway network conditions and TEN-T standards compliance – 30 per cent of the core rail network is in very good and good conditions, where approximately 70 – 100 per cent of the designated speed can be achieved. The largest part of the core network is in poor and very poor conditions (1,083 km), with larger variations in the maximum allowed speed. Approximately, 26 per cent of the sections are in medium condition.

143

Source: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A22017A1027%2801%29>



The compliance check exercise carried out in 2021, focused on the indicative extension of TEN-T Core and Comprehensive Networks to the Western Balkans. Referring to each TEN-T standard, the region is behind in the implementation of ERTMS. There are few ongoing projects in Serbia, North Macedonia, and Kosovo (ERTMS included), but still there are no rail lines with ERTMS in operation. A small percentage of the Core and Comprehensive networks is compliant with current operating speeds. This is an interesting finding, as the designated speed in more than 79 per cent of the Core and 65 per cent of the Comprehensive networks is more than 100 km/h, which is the threshold for compliance. These results clearly indicate that a large percentage of the problems that railway networks in the region face, are due to lack of proper maintenance. Additionally, the region does not satisfy train length criteria.

Table 10. Compliance with TEN-T criteria on Rail Core and Comprehensive Network¹⁴⁴

TEN-T criteria/Network	Core	Comprehensive
Electrification	73%	54%
Axle load (22.5 tonnes)	87%	72%
Line speed	19%	12%
Train length	0%	0%
Track gauge	100%	100%
ERTMS	0%	0%

Road network conditions and TEN-T standards compliance - Investments in road infrastructure count for the biggest share and due to such efforts, road sections in good and medium conditions prevail (about 72 per cent), while only some (6.4 per cent) of the overall Core/Comprehensive Network can be treated as “non-maintainable roads” (being in poor and very poor conditions).

Nevertheless, the trend in the region is the continuous decline of roads from good to medium conditions. This is explained by general road budgets in each of the Regional Parties not being enough to cover the maintenance for sections that currently qualify as medium (or at least maintaining such conditions at the same level). Taking into consideration traffic growth, it can be expected that most (if not all) sections in medium condition will suffer decrease to the rating of poor or very poor. It should be noted that based on the TEN-T standards, as identified in the TEN-T regulation No. 1315/2013, the TEN-T requirements for the road network are:

- Roads to be either an express road or a motorway by 2030.
- Roads to have sufficient parking areas, at least every 100 km, by 2030.
- Alternative clean fuels to be available by 2030.
- Tolling systems/ITS and their interoperability to be used with other systems.

Within the framework of this analysis, in order for a road section to be compliant, it has to be of motorway standard and in very good or good conditions. Based on the compliance exercise that was performed in 2019, it seems that almost half of the OEM (Orient East -Med) Corridor is compliant (49 per cent), however, the compliance percentage for the MED (Mediterranean) Corridor, is at approximately 35 per cent.

144 Transport Community Permanent Secretariat, “Draft Annual TEN-T report 2020”, 2021



Inland Waterways and TEN-T standards compliance. The entire Danube River is compliant with the ECMT Class, in terms of maximum vessel length, tonnage and minimum height, under bridge TEN-T standards. However, with regards to the minimum draught TEN-T standard, the IWW link between Bezdan and Novi Sad (181 km long - approximately 30 per cent of the entire Danube Core Corridor) is not compliant, consisting thus of an infrastructural gap. Furthermore, particular attention should be paid to the border crossing with Hungary on the Danube River.

Sava River- Approximately 95 per cent of the Sava River is currently compliant in terms of ECMT Class, and the entire river is compatible in terms of maximum vessel length, tonnage and minimum height under bridge TEN-T standards. Furthermore, with regards to minimum draught, it is noted that only 13 per cent of the Corridor (81 km between Belgrade and Vrbica - Plandiste area in Serbia) is compliant with the respective TEN-T standard. Tisa River - at present, the IWW link on the Tisa River is compliant with TEN-T standards in terms of ECMT Class.

Inland and Maritime Ports and TEN-T standards compliance - All inland and maritime ports included in the Core Network are compliant with the TEN-T standards, regarding existing rail connections. None of the inland and maritime ports in the Western Balkans currently comply with the standards of the availability of alternative clean fuels.

Road Maintenance. Road maintenance and rehabilitation are lacking and are leading towards the premature deterioration of the road network in the Western Balkans. This is creating a cycle of building, non-maintenance, and reconstruction of roads which is a very inefficient use of public funds. The annual road budget for rehabilitation and maintenance is too low, and about € 380 million is urgently needed to fix the main roads in the worst conditions.

Road maintenance and network improvements can be more efficiently implemented by determining priorities through the systematic use of a Road Asset Management System (RAMS). While such systems have already been attempted, they were not fully established, and their sustainability has been to a limited degree. With the support of the World Bank, in 2020, RAMS was set up in North Macedonia, and progress is being made to set up in Albania and Serbia. There is a lack of proper practice of road conditions surveys. These are not carried out on demand, and not on a regular basis. This has led to a lack of regular analysis of maintenance activities on a timely and efficient way. Actions to establish efficient maintenance systems in the Western Balkans are included in the Road Action Plan.

Climate Resilience. The Western Balkans has shown itself to be vulnerable to extreme weather events particularly: i) Landslides and unstable slopes along highways, main roads and railways; ii) transport infrastructure in the vicinity of river flows which can be affected by floods; iii) Rising groundwater levels; iv) Floods in spring and summer and snowdrifts in the winter periods. The regular occurrence of floods continues to represent a substantial livelihood risk in the region as demonstrated during floods in May 2014 and more recently in April 2016.

Case study – Recent floods impact in the Western Balkans

During the floods of May 2014, the negative effects of disasters were evident. The largest rainfall precipitation event in 120 years affected Bosnia and Herzegovina and Serbia. Regional Parties' GDP was affected during floods 2014, Serbia lost 4.7 per cent of its GDP in damages and losses and Bosnia and Herzegovina 15 per cent. It is estimated that around 90,000 people were displaced, and a total of 81 local governments suffered damages, losses, as well as social or environmental impacts of a varying degrees. The most affected sector was mining/energy (32 per cent of the total), followed by housing, agriculture and trade, each accounting for around 15 per cent. The recovery needs assessment analysis for Serbia, suggested that the total effect on transport infrastructure was estimated to € 166.5 million, out of which € 96 million was estimated damage and € 70.5 million was estimated loss (According to the World Bank, Serbia Floods, 2014; WB, Bosnia Herzegovina Recovery Needs Assessment, 2014).

In North Macedonia, in August 2016, heavy rains and floods are estimated to have caused around € 22 million in damages and € 4 million in losses which translates into respectively 0.2 per cent of GDP in damages and 0.4 per cent of GDP in losses.

Transport was one of the main sectors affected showing how vulnerable the entire region is to climate change, due to lower resilience and adaptive capacity. Climate change adds to the pressure and urgency to develop effective institutional protocols and mechanisms that provide flexibilities required for a timely and effective response. Climate resilience importance, when it comes to transport infrastructure, has been recognised but none of the Regional Parties have prepared nor approved any targeted adaptation strategy to climate change for the transport sector. Some developments can be reported in Albania, Bosnia and Herzegovina and Serbia with cross-cutting strategies that will address transport sector challenges in relation to adaptation to climate change.

Recently, risk assessment of the vulnerable assets and operations, due to climate change, has been practiced in the Western Balkans mainly on IFIs funded projects. However, it lacks consideration of maintenance interventions on existing road infrastructure. There is an increased awareness amongst all the Regional Parties on their need to climate change assessment and to align the guidelines at Western Balkans level, and this is included in the Road Action Plan.

5.3.2. FLAGSHIP 9 – SOCIAL MOBILITY ISSUES

The transport sector is a major contributor to Western Balkan economies, supporting jobs and being a key driver of connectivity in the region. The sector represented around 5 per cent of the Western Balkans workforce in 2018¹⁴⁵.

A well-functioning market needs to be based on fair working conditions. Every worker in the Western Balkans region needs to have certain minimum rights relating to health and safety at work, equal opportunities for women and men, protection against discrimination and labour law. The Western Balkans region must make sure that each country's national laws protect these rights. It is true that the transport sector often suffers from a negative image in terms of working conditions, which might discourage young people and women from looking for transport jobs.

145 Source: International Labour Organisation, 2018



Social standards and rules are therefore put in place to protect consumers and workers. However, certain developments put those aspects at risk: the economic downturn due to the pandemic; an uneven level playing field amid growing international competition; the erosion of traditional social structures; and demographic change. These are among the challenges that should be addressed to retain a highly skilled workforce, protect workers' rights and to ensure that the green and digital transitions are just and inclusive. To foster the mobility of people, the transport sector should also remain affordable, available (including for persons with disabilities and reduced mobility or living in rural and remote areas), accessible, and offer high quality services. Sustainable and smart transition will have an impact on jobs, training and the skills required in the future. Some jobs may be at risk due to automation but, at the same time, the ongoing digital transformation brings new opportunities.

SOCIAL ISSUES

Workers in the transport sector in the Western Balkans face a number of challenges when it comes to social rules and their application. Employees in the transport sector need **job security, good social standards, and attractive and fair employment conditions**. This means improving staff safety, attracting new staff, managing the ageing work force, and recruiting young people.

The Contracting Parties of the Transport Community Treaty have **established a Social Forum**. Through the Social Forum, the Transport Community Permanent Secretariat shall **reinforce and promote social dialogue and the social dimension with reference to the acquis in social matters**, the workers' fundamental rights and the involvement of the European Economic and Social Committee as well as the national and European social parties acting in the transport sector, at the appropriate level.

With respect to the general social issues in transport in the Western Balkans, there is a lack of implementation of existing legislation in working conditions, a healthy and safe working environment, and equal opportunities.

PASSENGER RIGHTS

The EU framework for passengers' rights provides a minimum level of protection of people using the collective transport services. The framework has developed gradually from a mode-specific approach defining a comprehensive set of rules into a wider concept.

In terms of passenger's rights in the Western Balkans region, there has been a partial transposition of the regulation 1371/2007. Regional Parties need to place additional emphasis on full transposition and further implementation of this regulation. Rail passenger rights have been addressed as one of the regional priorities within the Rail Action Plan.



Table 11. Status of the transposition of Passengers' Rights Directives in Regional Parties

Regional Parties	RAIL Passenger rights	ROAD Passenger rights	MARITIME Passenger ships
Albania	Partly	NA	NA
Bosnia and Herzegovina	Partly	NA	NA
North Macedonia	Partly	Partly	NA
Kosovo	Partly	NA	NA
Montenegro	Partly	Planned to be transposed in III Q 2021	Transposed
Serbia	Partly	NA	NA

WOMEN IN TRANSPORT

According to World Bank, women made up about 40 per cent of the workforce in Western Balkans labour markets, ranging from about 44 per cent in Albania, Montenegro and Serbia to a low of 21 per cent in Kosovo. During 2017 - 2018, women experienced a faster employment growth (1.4 per cent) than men (0.9 per cent) but differences exist across Regional Parties¹⁴⁶.

The regional **employment share in transport is only 5 per cent. Female participation** in the transport sector in the region **ranges from 1 – 1.5 per cent of the total workforce in this sector**. Female representation in top management positions in the transport sector is very low, only 1 out of 6 ministers dealing with transport are women, and the same trend continues in the top management positions at the executing agencies.

YOUTH AND EDUCATION

The success of transport largely depends on the availability of a skilled workforce. There is a risk of a skills mismatch in certain transport sectors. The transport sector often suffers from a negative image in terms of harsh working conditions (atypical hours, long periods away from home), which may discourage young people in particular from looking for transport jobs. This lack of attractiveness increases the need to make the transport sector more appealing to young men and women.

146 World Bank, "Labour Market Trends", 2017

5.3.3. FLAGSHIP 10 – TRANSPORT SAFETY AND SECURITY

ROAD SAFETY

All Six Western Balkans Regional Parties had an adopted national road safety strategy in line with the goals of the First Decade of Action 2010-2020. Most road safety strategies provide targets and envisage monitoring reports. The effectiveness of road safety policies to date can be gauged by the reduction in the number of road deaths.

In 2020, the Western Balkans region had 1,171 road traffic deaths compared with 625 lives saved for the last 10 years. Every year a slight reduction has been reported resulting in a reduction of fatalities compared to the baseline year of 2010. However, the Western Balkans road-death rate for 2020 is 64 people per 1 million inhabitants, which is very high in comparison with the EU27 rate of 42 people per 1 million inhabitants.

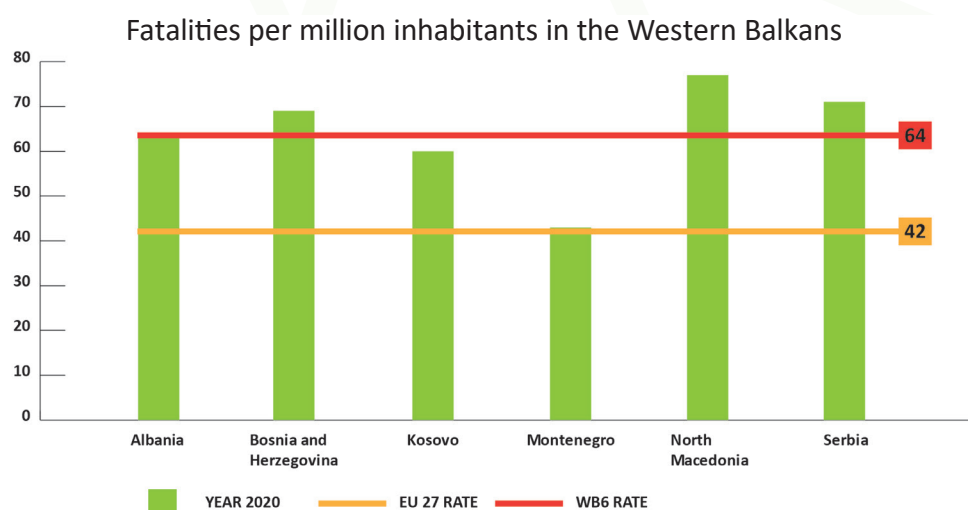


Figure 19. Fatalities per million inhabitants in the Western Balkans 2020¹⁴⁷

The economic cost of road traffic crashes at national level remains high in the Western Balkans. For example, national estimates place this cost¹⁴⁸ at:

- 1.6 per cent of GDP in Albania,
- 4 per cent of GDP in Bosnia and Herzegovina,
- and 2 per cent of GDP in Serbia.

The Permanent Secretariat has a mission to help governments in the region to make roads safer for everybody. The **Road Safety Action Plan**¹⁴⁹, endorsed by the Transport Community Ministerial Council on 26 October 2020, **promotes** safety management, safer infrastructure, and protection of road users. Its actions strive to support the Safe System principles through a multi-sectorial approach and to encourage regional best practice examples.

¹⁴⁷ Transport Community Technical Committee on Road Safety

¹⁴⁸ Source : https://www.afro.who.int/sites/default/files/2017-06/9789241565066_eng.pdf

¹⁴⁹ Source : <https://www.transport-community.org/wp-content/uploads/2020/11/Road-Safety-Action-Plan.pdf>



Regional Parties have to develop a new Road Safety Strategy and an Action Plan with the aspirational target to halve the number of fatalities and serious road traffic injuries from 2021 to 2030. The Strategy is recommended to be based on Safe System principles in line with the EU Road Safety Policy Framework 2021 - 2030. So far, only Montenegro has a National Program and Action Plan on Road Safety for 2020 - 2022 in line with the Second Decade of Action for 2021 - 2030.

European Directive 2008/96/EC on Road Safety Infrastructure Management (the “Directive”) provides new legal requirements for the safety management of the Trans-European Road Network. This Directive requires the establishment and implementation of procedures relating to road safety impact assessments, road safety audits, the management of road network safety and safety inspections. **None of the Regional Parties has fully transposed and implemented the Road Safety Infrastructure Management;** however, Albania, Montenegro and Serbia have adopted the New Traffic Law on safety. Full transposition of the Directive is expected to be finalised after the adoption of the new by-laws.

Data collection of road traffic deaths and serious injuries is still to be improved in the region. Improvement of the data collection system is recommended and harmonisation with CADaS protocol is necessary to make the data comparable with EU Member States. There is a missing linkage between the databases of the Ministry of Interior Affairs (Police) and the Ministry of Health (Hospital data). The difference between national statistics and WHO reporting of data is still big in some Regional Parties. Serbia has been leading the region in this aspect and is the regional benchmark to follow.

RAIL SAFETY

The European Parliament Directive 2016/798/EC (Railway Safety Directive) sets out several measures to develop and improve safety and to improve access to the market for rail transport services. This Directive sets out the principles for:

- defining the responsibilities between the different bodies involved in the rail system;
- developing common safety targets and common safety methods with the aim of removing national rules and therefore barriers to the development of a single European railway area;
- setting out the principles of safety certificates and authorisations;
- the establishment of a national safety authority and an investigation body for railway accidents and incidents;
- and defining common principles for the management and supervision of railway safety.

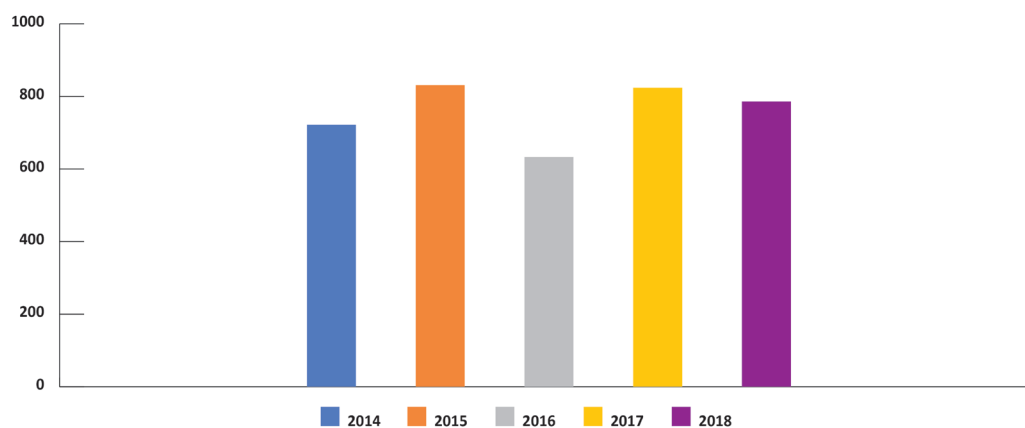
Directive (EU) 2016/798 on railway safety will repeal and replace Directive 2004/49/EC. The new directive aims to improve railway safety across the EU by revising the role of national safety authorities (NSAs) and reallocating responsibilities between them and the European Union Agency for Railways. **Most of the Regional Parties have partly transposed and implemented Directive 2004/49/EC.**

One of the most sensitive aspects of rail safety is how to improve safety on level crossings. The current situation shows that majority of the level crossings do not have proper protection. Depending on the type of signalling, LCs can have “passive” or “active” signalisation.

Table 12. Total number of the Level Crossings with active or passive signalling¹⁵⁰

Regional Parties	LCs on rail network (no)	LC with road horizontal/vertical signalisation (without barriers) (no)	LC with manual barriers (no)	LC with signal-safety equipment (automatic barriers, light/sound signals) (no)	Passive	Active	Accidents and incidents on LC (2018) (no)
Albania	125	86	39	0	69%	31%	22
Bosnia and Herzegovina	493	434	0	59	88%	12%	53
North Macedonia	248	142	11	95	57%	43%	97
Kosovo	267	241	2	24	90%	10%	19
Montenegro	23	4	0	19	17%	83%	47
Serbia	2131	1591	221	319	75%	25%	548
Region	3287	2498	273	516	76%	24%	786
EU					45%	55%	

Total number of accidents per year – Western Balkans region

Figure 20. Total number of accidents on level crossings per year in the Western Balkans region¹⁵¹

150 Transport Community Technical Committee on Railway
 151 Ibid



Comparisons of fatality risks for travelling passengers (occupants) reveal that rail is one of the safest modes of transport. The fatality risk for an average passenger is about 0.10 fatalities per billion passenger-kilometres, comparable with the risk of commercial flight passengers of 0.06 fatalities per billion passenger-kilometres. The fatality risk for a train passenger is lower than the risk for a bus/coach passenger.

Table 13. Fatality risk of passengers using different modes of transport¹⁵²

Transport mode used by user	Fatalities per billion passenger-kilometres
Airline passenger (on EU territory)	0.06
Railway passenger	0.1
Maritime vessel passenger	0.27
Car occupant	2.67
Car driver	1.82
Car passenger	0.85
Bus/coach occupant (note: figures relate to the 2010-2014 period not 2011-2015)	0.19
Powered two-wheelers	37.8

Keeping in mind that most of the fatalities in Rail transport are not directly or indirectly involved in the rail traffic and transport but are mostly victims from unauthorised presence or from level crossing accidents, it is important that safety on level crossings is improved, and that public awareness is raised regarding the safety risks related to railway traffic.

TRANSPORT OF DANGEROUS GOODS

By taking over the annexes of the international agreements governing carriage of dangerous goods by road (ADR¹⁵³), rail (RID¹⁵⁴) and inland waterways (ADN¹⁵⁵), Directive 2008/68/EC¹⁵⁶ makes these rules compulsory for national transport.

Application and accession to the international agreements is uneven in the Western Balkans. Kosovo, for example, cannot accede to the international instruments mentioned above. Furthermore, the signatories to the Framework Agreement on the Sava River Basin decided to apply ADN on a voluntary basis, without acceding to the treaty. All Regional Parties, except Kosovo, are contracting parties to ADR and RID.

152 European Commission, "DG Mobility and Transport, Statistical pocketbook 2016 — EU transport in figures", 2016.

153 Agreement concerning the International Carriage of Dangerous Goods by Road (ADR): <https://unece.org/about-adr>

154 Regulation concerning the International Carriage of Dangerous Goods by Rail (RID), Appendix C to the COTIF Convention

155 European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN): <https://unece.org/about-adn>

156 Directive 2008/68/EC of the European Parliament and of the Council of 24 September 2008 on the inland transport of dangerous goods, OJ L 260, 30.9.2008, p. 13.



Implementation of the EU Acquis is still lagging, and further investments are needed in this sector in the Western Balkans to close the gap in terms of adaptation to technical and scientific progress. A first step to that end is accumulation of know-how by administrations in the region and strict follow-up of the biennial amendments of the international agreements. Not all Regional Parties clarified within their legal systems the rules for follow-up or transposition of biennially amended Directive 2008/68/EC on technical and scientific progress.

Considering the rapid development of the sector, retention of human resources in dangerous goods transport, upstream and downstream industries and administration is essential. Cross-border cooperation between the Regional Parties is currently used as a solution to cater for absence of human resources, including in terms of common use of legal instruments updating ADR, RID and ADN.

Various types of dangerous goods need specific means of containment, which have to be type-approved according to the regulations. Sometimes the Western Balkans markets lack adequate packaging and manufacturers are not encouraged to produce them locally.

Directive 2010/35/EU is the legal instrument raising most problems in transposition and application, due to the challenging task of building domestic accreditation schemes, establishing independent inspection bodies whose activities could be recognised at EU level. Even if inspection bodies are established in some Regional Parties, know-how concerning implementation of the standards for construction, type approval, periodic inspection and checks of tanks, cylinders, multi-element gas containers etc. is needed. **Further involvement is needed from authorities and inspection bodies in standardisation activities at national level and in the development of CEN/ISO standards.** Moreover, cross-sectoral administrative cooperation is necessary to put in place the appropriate safeguards domestically and comply with the EU general requirements for the application of product legislation in general.

Governments of all Regional Parties need to also enforce international agreements on the transportation of dangerous goods. Controls according to Directive 95/50/EC¹⁵⁷ are not organised by all Regional Parties and in some cases, still need to be transposed. In these specific cases, adequate training is needed for officials entitled to perform such activities before an increase in administrative capacity or legal writing support can be considered.

To enhance safety and security, further investment is needed by the Regional Parties in emergency responses and interventions in case of accident or incident during the transportation of dangerous goods. First responders - firefighters, medical services - need to be further trained to ensure appropriate knowledge in terms of on-the-spot interventions to prevent escalation of incidents and accidents. Appropriate procedures and resources to deal with the aftermath of such events do not always exist. Readiness to intervene with different extinguishing agents depending on the dangerous goods involved in crashes is desirable to prevent loss of human lives and damage to property and the environment.

157 Council Directive 95/50/EC of 6 October 1995 on uniform procedures for checks on the transport of dangerous goods by road, OJ L 249, 17.10.1995, p. 35.



Greening transport of dangerous goods cannot be achieved in the absence of adequate treatment of waste shipments. The implementation of Regulation (EC) No 1013/2006 on shipment of waste should be prioritised and also included not only in transport strategies, but also in industrial and environmental policy and strategy developed internally by each Regional Party. The industry needs incentives to replace its old fleet which reaches the end of service life with green, less polluting vehicles.

Within the framework of the **Technical Committee on the Transport of Dangerous Goods of the Transport Community, further steps need to be taken towards gap analysis. Regional Parties are invited to cooperate to define Guidelines for the implementation of EU acquis on the Transport of Dangerous Goods.** These Guidelines are meant to function as a working tool for competent authorities and to be included in national transport, industrial and environmental action plans and strategies.

Regional Parties benefit from a platform that can be used to further cooperate and engage in an active dialogue with the EU Member States and the relevant international organisations on the green transport of dangerous goods. This platform functions as an incentive to be actively involved in research and development in this area.

Table 14. Implementation of transport of dangerous goods acquis

Regulatory framework/ RPs	Albania	Bosnia and Herzegovina	North Macedonia	Kosovo	Montenegro	Serbia
Directive 2008/68/EC¹⁵⁸	Partial	No	Partial	No	No	Yes
ADR	Yes	Yes	Yes	No	Yes	Yes
RID	Yes	Yes	Yes	No	Yes	Yes
ADN	Not applicable	No	Not applicable	Not applicable	Not applicable	Yes
Directive 2010/35/EU¹⁵⁹	No	No	No	No	No	No
Council Directive 95/50/EC¹⁶⁰	No	No	No	No	No	No

158 EC progress reports 2020

159 ibid

160 ibid

DISCLAIMER

The information and views set out in the present Strategy are compiled through desk research and input from Regional Parties and do not necessarily reflect the official opinion of the Transport Community. The opinions expressed and arguments employed herein do not necessarily reflect the official views of Regional Parties or EU Member States. The Transport Community does not guarantee the accuracy of the data included in this strategy. Neither the Transport Community nor any person acting on its behalf may be held responsible for any potential use which may be made of the information contained herein.



