



EUSAIR Transport MasterPlan

Volume 4 Road Transport

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This Volume is part of the *Transport Masterplan of the Adriatic-Ionian Region*, elaborated by the *EUSAIR Facility Point* with the technical assistance of *PTSCCLAS*, *TPS Pro* and *Systematica*, with the collaboration of *Tplan Consulting*, under the supervision of *Prof. Pierluigi Coppola* (Politecnico di Milano). Credits for reviewing and editing goes to *Dr. Francesco de Fabiis* (Politecnico di Milano).

The Masterplan includes the following volumes:

Volume 1 – Executive Summary

Volume 2 – Maritime Transport

Volume 3 – Inland Waterway Transport

Volume 4 – Road Transport

Volume 5 – Rail Transport and related Intermodality

Volume 6 – Air Transport

Volume 7 – Accessibility to urban nodes and tourist attractions

Introduction

Volume 4 of EUSAIR Transport Masterplan is focused on road transport. The Volume consists of three chapters.

The overall objective of Chapter 1 is to describe road transport characteristics in EUSAIR countries.

To do so, it is divided into 9 paragraphs, each related to a different Country. Every paragraph includes road network overview, road traffic volumes (passengers and freight) report, border checkpoints infrastructural and operative characteristics, road safety in national and transnational networks, ITS applications in national and transnational road networks and alternative fuel availability usage. Finally, in paragraph 10 is represented a summary of the key issues identified on the road transport network in each EUSAIR region.

To get an overview, the following figure shows Adriatic-Ionian Region Road network distinguished by primary, secondary and tertiary roads. In blue it's possible to recognize the detail of the TEN-T Core network corridors (without the indicative extension within the Balkan area).

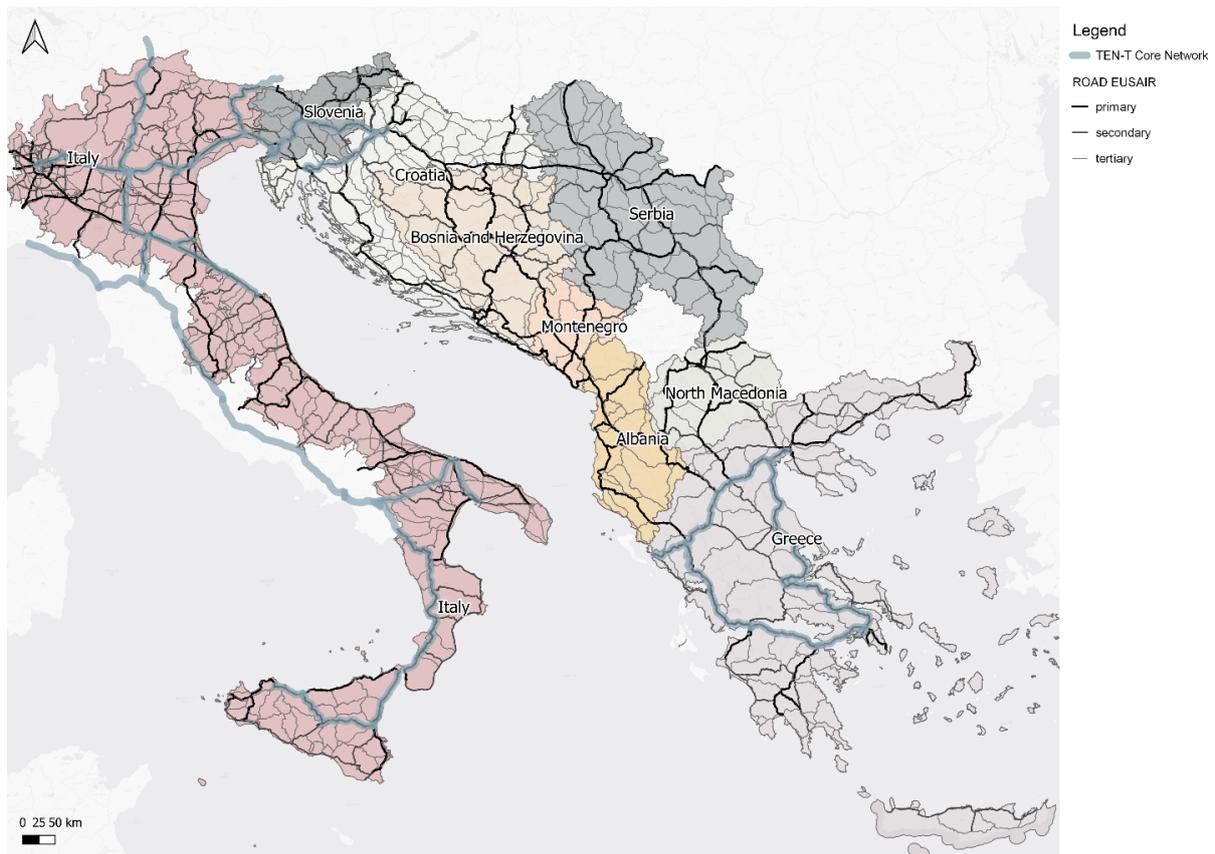


Figure 1 Adriatic-Ionian Region Road network

Chapter 2 is focus on road infrastructural project, providing the extensive list of road projects identified in the Adriatic-Ionian Macro Region. The projects have been recognized through the review of existing and available transport plans and investment programs, including both national and international documents.

To provide the details of planned projects, investment plans and to drafting the road transport sector programmatic framework, national transport plan, EU investment plans and strategies have been investigated based on availability. Documents consulting are in particular:

- Connecting Europe Facility (CEF) Transport projects funding by EU
- The National Recovery and Resilience Plan (NRRP)
- Trans-European Transport Network (TEN-T)
- Development of indicative TEN-T extensions of the Comprehensive and Core Network in Western Balkans
- The National Transport Plan
- The National Road Transport Strategy
- The international financial investment plans (World Bank, EU Investment Bank, etc.)

Information collected allowed the construction of a Geographical Database in which selected interventions are described by the type of project, main goal of the intervention and the belonging scenario. In this Chapter are shown tables and maps, elaborated for each Country to simplify project identification. Following image represent a summary of road projects analysed in Adriatic-Ionian Region.



Figure 2 Adriatic-Ionian Region Road projects

1 Road transport characteristics in EUSAIR countries

1.1 Albania

1.1.1 Road network overview

The overall length of road network in Albania is 18,300 km and includes National roads, Local Roads, Urban or municipal roads and Private access roads. All roads in the country are property of Albanian Road Authority (*Autoriteti Rrugor Shqiptar (ARRSH)*), a directorate subordinated to the Ministry of Transportation and Infrastructure based in Tirana.

The National Roads network connects all major cities tourist centres, border points with neighbours and carries most of the traffic of the Country. According to the Albanian Road Authority (ARA) the National Roads network extends for about 3,950 km, including both primary roads (Motorway) and secondary roads, of which only two thirds (represented by Main Secondary roads mainly) of the total length are paved roads.

The main transport network in Albania is represented by motorways. In these there is a speed limit of 110 km/h and the sections that constitute them are:

- **A1**, which connects the port city of Durrës on the Adriatic Sea in the west and the capital Tirana in the centre, with the Republic of Kosovo in the northeast. This is the country's longest and only toll highway.
- **A3** connects Tirana with the Pan-European Corridor VIII, running from Durrës on the Adriatic Sea to Varna on the Black Sea. It represents the second longest motorway.
- **A2** is the third longest motorway and also a significant north-south corridor within the country and the Adriatic-Ionian motorway.

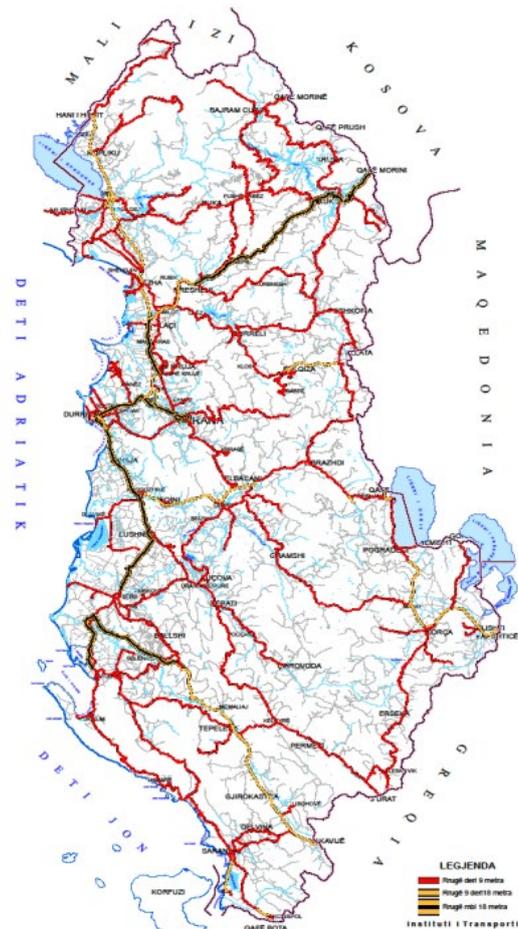


Figure 3 Road network in Albania. [Source: Ministry of Infrastructure and Energy Albanian roads Authority]

Table 1 Length of the road network in Albania by type of road (2020)

ROAD TYPE	LENGTH (KM)
Primary Road	1,184
Main Secondary Road	359
Secondary Road	2,058
Total	3,945

Management tool for road traffic have only been implemented on the A1 Motorway, which has become a toll highway since March 2018. A2 and A3 motorways instead, are free of charge but there are plans to implement them in the future.

Albania is crossed from east to west by the Pan-European Corridor VIII (shown in green in Figure 4), which pass through the country from Durrës on the Adriatic Sea to Lin and continuing across the Republic of Macedonia and Bulgaria ending at Varna on the Black Sea in the east.



Figure 4 Map of Albania Transport Corridors [Source: Sectorial Strategy of Transport & Action Plan 2016 – 2020 First Monitoring Report, Ministry of Infrastructure and Energy, 2018]

According to the Second Five Years Review of the Albanian National Transport Plan, during the last decade road network was hardly improved and restructured, but missing links, network capacity and accessibility or rural areas are still a major issue in the country. In this respect, the Government of Albania adopted the Sectorial Strategy of Transport and Action Plan 2016-2020 with the main goal to have an efficient transport system, integrated in the region and in the EU network to promote economic development and upgrades the citizens' quality of life.

Most of the transport investments already completed, under construction and planned, concern the Indicative Extension of the TEN-T Comprehensive Network to the Western Balkans.

In this respect, the key challenges for Albanian road transport are:

1. Complete the construction of the national road network, including strategic arteries.
2. Complete the feasibility study for the Adriatic-Ionian Highway North-South (to facilitate the commencement of works on segments), including the full completion of the corridor Milot - Morine, Arbri Road as a branch of Corridor VIII.
3. Harmonize the national legislation with the EU acquis for road transport of goods and passengers.
4. Reform the intercity passenger road transport network.
5. Maintain Albania's road transport infrastructure according to EU standards.
6. Observe technical standards including the need to increase road safety.

As regards the proposal for the extension of the Trans-European Transport Networks in Albania (formalised in the Regulation (EU) 2016/758 which amends annex III of Regulation (EU) 1315/2013¹), the development of the Mediterranean Core Network has been envisaged. Going into detail, road sections involved are the following:

- Shkoder-Lezhe- Milot- Mamurras- Vore, which overlaps to Pan-European Corridor Route 2b (E762)
- Tirana-Durres- Rrogozhine- Lushnje- Fier which overlaps to Pan-European Corridor VIII (SH2, SH4)
- -Telepene- Gjirokaster- Kakavija (AL/EL Cross border) which overlaps to Pan-European Corridor Route 2c (E853)

According to the study “The First Five Year Review of the Albanian National Transport Plan” is necessary to increase the capacity of all sections part of the Mediterranean Corridor by widening road sections, the following intervention shall be foreseen to avoiding capacity issues:

- from Hani Hotit up to Milot (2x2 lanes),
- Tirane- Durres (3x3 lanes),
- Thumane-Vore (2x2 lanes) including the by passing of Shkoder,
- Lezhe, Tirane, Tepelena and Gjirokaster nodes.

1.1.2 Road traffic volumes (passengers and freight)

The Second Five Years Review of the Albanian National Transport Plan (ANTP3), published in 2018, provides figures on the traffic volumes for both passenger and freight in Albania.

Regarding the number of passengers by car running on the Albanian road network has experienced an annual increase of 9% in the period 2010-2018, and a continuous growth of 10.8% in number of cars in the Albanian roads.

On the other hand, people travelling using minibuses have experienced a slight annual decrease of 1.8% in the same period. The decrease showed in the number of minibuses is close to the 14%, due to an increase in occupancy of this type of vehicle.

Differently, the number of passengers travelling by Bus has increased 2% annually during 2010 to 2018 with a reduction in the number of vehicles of 3.5%, increasing the occupancy also.

According to the Study on Mediterranean TEN-T Core Network Corridor by the EC, traffic congestion is a major concern on the Albanian road network and compromises accessibility, especially to get into/from the centres of the main towns. Road congestion is mainly caused by the very high transit flows due to lack of external by-pass route; especially along relevant connection where intense traffic flows generate relevant bottlenecks.

¹ Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No 661/2010/EU Text with EEA relevance. ELI: <http://data.europa.eu/eli/reg/2013/1315/2019-03-06>

As regards the freight transport, the growth in the number of tons transported is set in 5.4% annually for the period 2010-2018. At the same time, the number of trucks x km had an annual growth of 8.4% in the period 2010-2018. The following table compare the 2018 Plan with the previous Plan (2010).

Table 2 Total number of passengers and number of vehicles by type (2018) [Source: ANTP3, 2017]

Type of vehicle	2010 ANTP 1		Base year 2018 ANTP 3	
	Number of vehicles	Number of passengers	Number of vehicles	Number of passengers
Passenger Car	39,862	95,669	90,837	190,843
Mini bus	7,598	56,989	2,352	49,329
Bus	2,324	57,412	1,738	67,254
Total passengers	49,784	210,070	94,927	307,426

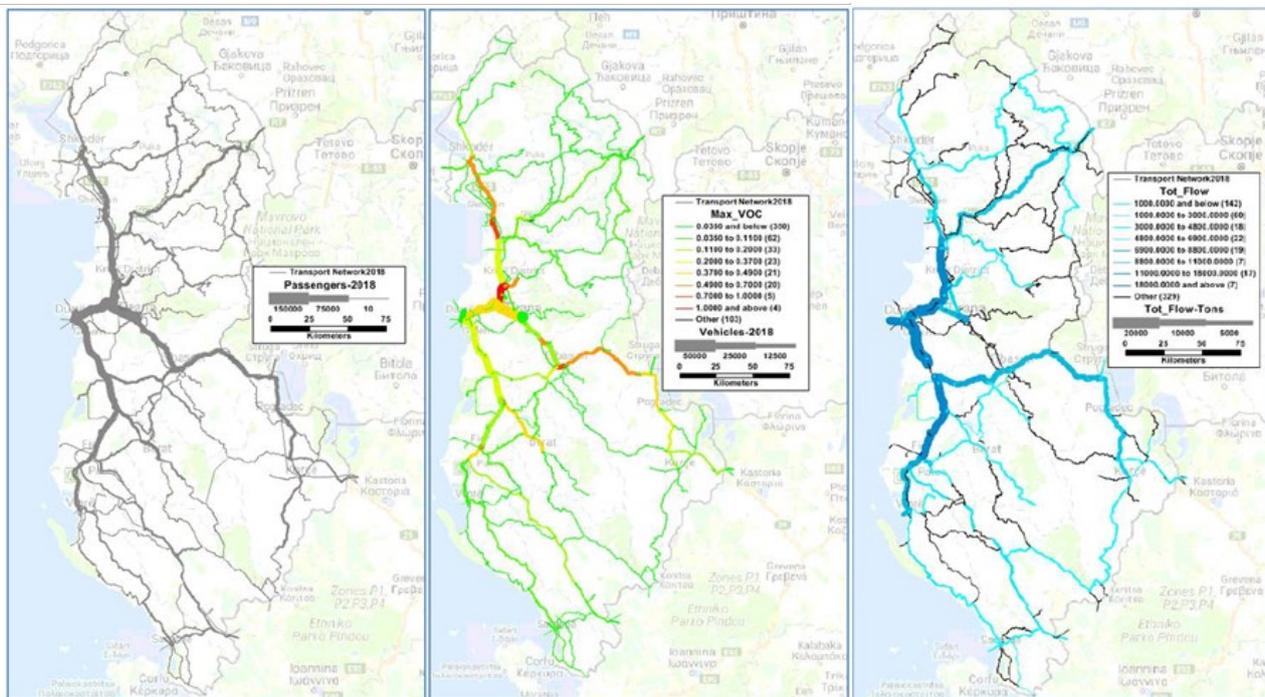
Table 3 Total number of tons transported (2018) [Source: ANTP3, 2017]

	2010 ANTP 2	Base year 2018 ANTP 3
Tons transported yearly basis	13,851,000	17,085,737
Total truck vehicles per day	6,704	9,249
Total trucks x km per day	784,058	1,109,071
Average trip length in km	117	119.9

Looking at the distribution of passenger traffic flows on the network, it is possible to see how the main problems occur in the Tirana-Durres zone, along with the northern segment of the Adriatic-Ionian Corridor and the southeastern connection with Greece and North Macedonia. Similar with passenger traffic, freight traffics on the road network show rather clearly the relevance of the Dures node.

According to the study “The First Five Year Review of the Albanian National Transport Plan” (2009), several interventions need to be planned to avoid bottlenecks on relevant section, therefore, following this, the Government foresee the realisation of several projects aiming at doubling the following road sections: from Hani Hotit up to Milot (2x2 lanes), Tirane-Durres (3x3 lanes), Thumane-Vore (2x2 lanes) including the by passing of Shkoder, Lezhe, Tirane, Tepelena and Gjirokaster nodes.

Figure 5 Total daily (passenger and vehicle) flow (left) and freight flow (right) (2018) [Source: ANTP3, 2017]



In terms of passenger road vehicle registered in Albania, according to the National Institute of Statistics, during the 2015-2019 period the number of vehicles increase of about 24% with some registered peak in the Prefecture of Diber and Kukes.

Table 4 Passenger Road vehicles by prefecture [Source: INSTAT Regional Statistical Yearbook, 2020]

Prefecture	Number of Passenger road vehicles			Road Passenger road vehicles per 1,000 inhabitants		
	2015	2019	Change (%) 2015/2019	2015	2019	Change (%) 2015/2019
Berat	16,280	21,252	30.5	119	172	44.6
Dibër	10,074	14,078	39.7	77	120	54.8
Durrës	48,824	62,926	28.9	175	217	23.9
Elbasan	27,209	35,834	31.7	94	131	39.7
Fier	42,841	49,531	15.6	140	169	21.2
Gjirokastrë	12,713	11,512	-9.4	185	191	3.1
Korçë	21,351	25,825	21.0	98	125	28.2
Kukës	8,040	11,487	42.9	98	151	53.9
Lezhë	20,646	26,628	29.0	158	215	36.4
Shkodër	35,654	41,035	15.1	168	204	20.9
Tiranë	168,806	205,443	21.7	201	228	13.3
Vlorë	30,789	38,728	25.8	164	205	25.2
Albania	443,227	544,279	22.8	154	191	23.9

As reported on INSTAT 2020 Regional Statistical Yearbook regarding goods road vehicles, the number per 1,000 inhabitants in Albania from 2015 to 2019 has increased by 6.4%, with the highest increase being in the prefecture of Dibër with 22.4%, whereas the prefecture of Gjirokastrë presents the highest decrease

compared with other prefectures with 13.5 %. The prefecture of Tirana makes up 32.5% of the total goods road vehicle for 2019.

Table 5 Goods road vehicles by prefecture [Source: INSTAT Regional Statistical Yearbook, 2020]

Prefecture	Number of Goods Road Vehicles			Goods Road Vehicles per 1,000 inhabitants		
	2015	2019	Change (%) 2015/2019	2015	2019	Change (%) 2015/2019
Berat	4,002	4,333	8.3	29	35	19.9
Dibër	1,957	2,163	10.5	15	18	22.4
Durrës	8,184	9,936	21.4	29	34	16.7
Elbasan	5,662	6,034	6.6	20	22	13.1
Fier	9,897	9,655	-2.4	32	33	2.3
Gjirokastër	3,594	2,730	-24.0	52	45	-13.5
Korçë	4,888	4,980	1.9	22	24	8.0
Kukës	1,752	1,812	3.4	21	24	11.4
Lezhë	4,012	3,652	-9.0	31	29	-3.8
Shkodër	4,821	4,736	-1.8	23	24	3.2
Tiranë	23,817	27,029	13.5	28	30	5.7
Vlorë	6,253	6,016	-3.8	33	32	-4.2
Albania	78,839	83,076	5.4	27	29	6.4

1.1.3 Border checkpoints infrastructural and operative characteristics

Albania borders with Montenegro to the North-West, with Kosovo to the North-East, with North Macedonia to the East and with Greece to the South. Due to the lack of an extensive network of Motorways, some of the border checkpoints connect local or national roads. The border checkpoints are the following.

Border checkpoints with Montenegro:

- Vermosh - Guci border crossing (road SH20; it continues in Montenegro as regional road R-2),
- Pipe – Grabon border crossing (road SH20; it continues in Montenegro as regional road R-27),
- Hani i Hotit border crossing (road SH1; it continues in Montenegro as main road M-4)
- Muriqan - Sukobin border crossing (road SH41; it continues in Montenegro as main road M-1).

Border checkpoints with Kosovo:

- Tropojë border crossing (road SH22; continues in Kosovo as road M-9.1),
- Qafë Prushë border crossing (continues in Kosovo as road R-203),
- Morinë border crossing (motorway A1; it continues in Kosovo as roads R7 and M-25)
- Shishtavec border crossing (secondary roads).

Border checkpoints with North Macedonia:

- Bllatë – Blato border crossing (road SH44; it continues in North Macedonia as road R1202),
- Trebisht border crossing (secondary roads),
- Lakaica border crossing (interrupted),
- Qafë Thanë border crossing road SH9; it continues in North Macedonia as road A2),
- Buçimas border crossing (road SH64; it continues in North Macedonia as road R1301).

Border checkpoints with Greece:

- Qendër Bilisht border crossing (road SH3; it continues in Greece as roads E02 and A29)
- Tre Urat – Melissopetra (Μελισσόπετρα) border crossing (road SH80),
- Kakavia – Ktismata border crossing (road SH4; it continues in Greece as road E022),
- Qafe Bote border crossing (road SH97; it continues in Greece as road E018).

1.1.4 Road safety in national and transnational networks

In the last years, fatalities caused by road accidents have had a pronounced downward trend, the total number of accidents has been reduced in 2019 compared to 2018, however the number of fatalities is higher in 2019 compared to 2018.

According to the National Institute of Statistics, in 2019, there were approximately 7 casualties per 10,000 inhabitants with the highest casualty value in the prefecture of Lezhë with 20 per 10,000 inhabitants casualties, and the lowest value recorded in Dibër and Shkodër prefectures, with 2 casualties per 10,000 inhabitants.

Table 6 Number of accidents in Albania [Source: INSTAT Regional Statistical Yearbook, 2020]

No	Item Description	YEARS			
		2016	2017	2018	2019
I	Accidents in total	2,033	1,978	1,718	1,498
	per 10,000 vehicles	36.1	36.93	29.69	23.88
	per 100,000 inhabitants	70.67	68.91	60.02	52.64
II	Persons involved in accidents	2,779	2,611	2,291	2,044
	Number of fatalities	269	222	213	227
	Fatalities per 1 million inhabitants	93.4	77.1	74.0	78.8
	Number of Injured persons	2,510	2,389	2,078	1,817

Figure 6 Road accidents in Albania by number of vehicles and inhabitants [Source: 3rd Monitoring Report of Sectorial Strategy of Transport & Action Plan 2016 – 2020, Ministry of Infrastructure and Energy, 2020]

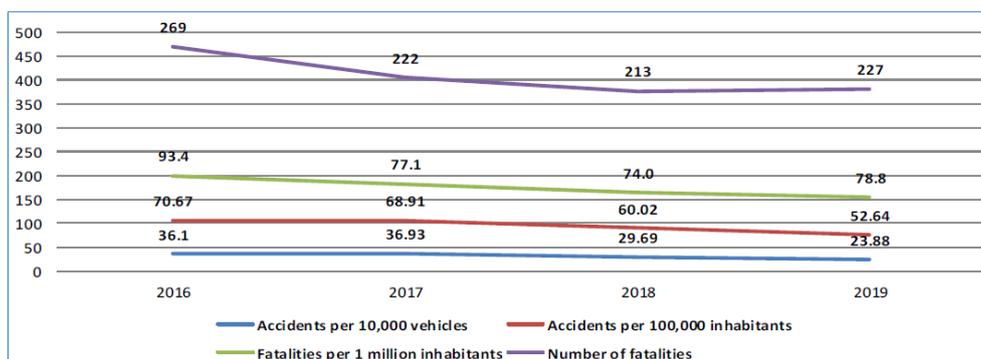
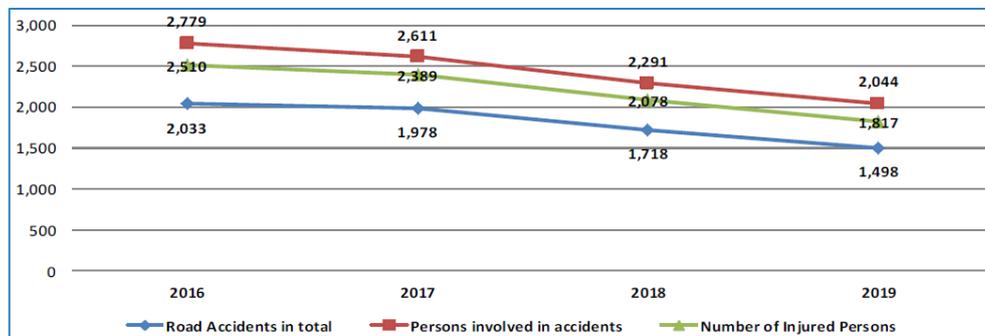


Figure 7 Road accidents in Albania [Source: 3rd Monitoring Report of Sectorial Strategy of Transport & Action Plan 2016 – 2020, Ministry of Infrastructure and Energy, 2020]



1.1.5 ITS applications in national and transnational road networks

Among the main challenges in the road sector for the 2016-2020 planning period, the Government of Albania has also declared the deployment of ITS systems. The National Transport Strategy and Action Plan 2016-2020 includes a list of priority actions and identifying the related list of tasks. Priority Action number 8 is aimed at the increase of Intelligent Transport System (ITS) use in the transport sector.

In this respect, the country has partially approached transposition of Directive 2010/40/EU, through Guidelines of the Minister responsible for Infrastructure and Transport on “Rules for the Implementation of Intelligent Systems in the field of Road Transport and for Interfaces with other modes of transport”.

As foreseen in the National Transport Strategy and Action Plan 2016-2020, the establishment of a Traffic Monitoring and Control Center for the primary road network in Albania will be implemented. The main objective of this project is to optimize traffic flow in the primary roads eliminating traffic congestions and reducing road accidents, ensuring traveller online information on traffic and weather conditions, and departing/arriving timetables, reducing travel time and travel cost while increasing travel commodity for the road users, reducing traffic pollution coming from exhausting gas emissions and acoustic noises as well.

This traffic management centre will coverage also traffic data across the entire national road network, to administer data through its Traffic Management System and be able to offer reports and statistics on traffic at any time.

To date, existing ITS applications are limited to control centres. The introduction of communication-information system for traffic control and management on Corridor X is foreseen, with the relevant design being under finalisation.

The Steering Committee of the WB Project “Maintenance and Road Safety Focused on Results” have prepared a request to secure funding for the preparation of the Pilot Project Study for the Establishment of the Road Traffic Monitoring Centre at approximately 200 km of national road (the Project will focus on equipping initial part of highway network in Albania (i.e. Tirana - Durrës and Tirana – Elbasan sections, approx. 200 km) with the possibility to be extended at another stage to about 1,500 km of the national network.

1.1.6 Alternative fuel availability usage

According to the National Action Plan for Renewable Energy Resources in Albania 2015-2020, one of the main targets was the increase of the contribution of biofuels and other burning materials from renewable resources with 10% in the total of fuel consumption in transport sector until 2020.

According to the Energy Community 2020 Annual Implementation Report, provisions related to the sustainability of biofuels in Albania are still not transposed and the legal framework remains completely non-compliant with Directive 2009/28/EC.

1.1.7 Key issues

This paragraph presents the most relevant issues highlighted by the analysis carried out on the road network by type of impact.

The impact of the existing problems on the efficiency of the road network has been therefore measured in terms of accessibility, safety/security, service, sustainability, and capacity.

The main problems or key issues identified with respect to the Albanian road network are list in the following table. In the columns it is possible to know the relationships between each theme and the type of impact.

Table 7 Albania: Identified Key Issues by type of impact.

COUNTRY	KEY ISSUE	ACCESSIBILITY	SAFETY/SECURITY	SERVICE	SUSTAINABILITY	CAPACITY
ALBANIA	Maximum speed on Motorways is 110km/h					
	Missing road connections to rural areas					
	Lack of capacity in sections candidate to become part of the TEN-T extension					
	Traffic congestion around urban area due to missing road bypasses					
	Some border checkpoint located in local roads					
	Very limited ITS deployment					

1.2 Bosnia and Herzegovina

1.2.1 Road network overview

The overall length of road network in Bosnia and Herzegovina (BH) is 24,000 km and includes 198 km of Motorways (Avtoceste), 4,039 km of Main Roads (Magistralne ceste) and 4,496 km of Regional Roads (Regionalne ceste). The remaining part of the network consists of local roads.

The Motorway network have been constantly enlarged in the last decade and, according to the National Institute of Statistics, between 2010 to 2019 the total length quadrupled from 48 km to 198 km but remaining to a very limited extension. The only Motorway, in fact, consist of the A1 part of the European route E73 which together with two Croatian motorways (A10 and A5) and the Hungarian M6, is planned to provide a road connection from Budapest to Ploče.



Figure 8 Road Network in BH. [Source: Wikipedia.org, Author: DzWiki/Illustration]

The country shares a relevant part of the SEETO (Southeast Europe Transport Observatory) road network with 470 km of roads along the following routes of the Vc Corridor that runs through the central part of Bosnia and Herzegovina, through the valleys of the Bosna River and the Neretva River in the North-South direction:

- **Route 1:** from the border with Croatia (near Ploče) to Neum (BiH), all the way to Dubrovnik (CRO).
- **Route 2a:** from the border with Croatia (in the direction of Okučani) and all the way to Banja Luka (BiH) and Lašva (BiH).
- **Route 2b:** from Sarajevo (BiH) to the border with Montenegro (in the direction of Podgorica).
- **Route 3:** from Sarajevo (BiH) to the border with Serbia (in the direction of Užice).
- **Route 9a:** from Banja Luka (BiH) - Doboj (BiH) - Tuzla (BiH) - Zvornik (BiH) towards the Republic of Serbia.

The country is also involved in plan for extending the TEN-T Corridors in the Balkan area in particular, the Core Transport Network for the Western Balkans was agreed in 2015, based on the Comprehensive network established under MoU and SEETO and the TEN-T methodology for the definition of the TEN-T Core Network.

The Bosnian Road sections potentially included in the Mediterranean CNC extension corresponds to the Pan European Corridor Vc (E73), which crosses all Bosnian country, from north – in Svilaj- to the port of Ploče. According to this, most of the Bosnian road alignment consist of express roads except for the motorway section Zenica-Sarajevo-Tarcin running for a length of about 100 km of separate carriage. Along the motorway maximum speed is 120 km/h, while, on the express road is 50-70 km/h.

To accomplish TEN-T standard (as required by the aforementioned Regulation), the section need to be upgraded by widening from 2 to 4 lanes in particular on the following sections.

Table 8 Section to be upgraded to meet TEN-T standards. [Source: Study on Mediterranean TEN-T Core Network Corridor 2 nd Phase, European Commission, 2018]

Section	Length (km)	Intervention needed by 2030
(HR/BA Cross border) Svilaj-Modrica	21	Doubling from 2 to 4 lanes (upgrading to motorway)
Doboj-Karuse	8	Doubling from 2 to 4 lanes (upgrading to motorway)
Karuse-Maglaj	21	Doubling from 2 to 4 lanes (upgrading to motorway)
Maglaj-Zenica	58	Doubling from 2 to 4 lanes (upgrading to motorway)
Tarcin-Konjic-Jablanica	46	Doubling from 2 to 4 lanes (upgrading to motorway)
Mostar bypass-Capljina-Doljani	55	Doubling from 2 to 4 lanes (upgrading to motorway)

Table 9 Road network in BH by type [Source: Thematic bulletin. Transport, Agency for Statistics of BH, 2021]

	2012	2013	2014	2015	2016	2017	2018	2019
Ukupno Total	8 549	8 558	8 733	8 732	8 794	8 776	10 158	8 733
Autoceste Motorway	48	50	127	127	163	172	198	198
Magistralne Main	3 782	3 779	3 779	3 779	3 870	3 870	4 787	4 039
Asfalt Asphalt	3 684	3 685	3 685	3 685	3 783	3 783	4 704	3 973
Makadam Macadam	98	94	94	94	87	87	83	66
Regionalne Regional	4 719	4 729	4 827	4 826	4 761	4 734	5 173	4 496
Asfalt Asphalt	3 768	3 772	3 870	3 876	3 841	3 830	4 248	4 009
Makadam Macadam	951	957	957	950	920	904	925	487
Od ukupnog E-cesta Out of total E-roads	547	547	547	547	547	547	547	580

1.2.2 Road traffic volumes (passengers and freight)

According to Statistics Agency of Bosnia and Herzegovina, the number of passengers carried by public transport on roads shows a strong decline in the last decade and to date is just half of what registered in 2012, from 31,404 in 2012 to 14,053 in 2019. On the other hand, vehicle-km covered by public transport remains constant, while the passenger-kilometres decrease showing a decrease in the demand despite the offer.

This decrease has also interested the private transport in the urban and sub-urban area from 156, 129 passengers carried in 2012 compared to 122,004 carried in 2019.

Table 10 Passenger in road transport in BH [Source: Thematic bulletin. Transport, Agency for Statistics of BH, 2021]

	2012	2013	2014	2015	2016	2017	2018	2019
Pređeni kilometri vozila <i>Vehicle-kilomteres covered, 000</i>	94 404	96 435	94 033	87 254	85 475	93 982	95 190	95 774
Prevezeni putnici, 000 <i>Passengers carried, 000</i>	31 404	28 731	19 754	20 471	16 505	15 906	16 580	14 053
Putnički kilometri, 000 <i>Passenger-kilometres, 000</i>	1 925 302	1 750 291	1 660 186	1 690 393	1 706 372	1 661 840	1 715 348	1 732 480

Table 11 Urban and sub-urban transport [Source: Thematic bulletin. Transport, Agency for Statistics of BH, 2021]

	2012	2013	2014	2015	2016	2017	2018	2019
Pređeni kilometri vozila <i>Vehicle-kilomteres covered, 000</i>	54 112	61 068	61 123	60 592	62 937	63 572	65 097	63 271
Prevezeni putnici, 000 <i>Passengers carried, 000</i>	156 129	144 864	139 596	138 705	131 776	130 502	127 463	122 004

On the other hand, freight transport shows an increase in the demand, from 6,315 thousand tonnes carried in 2012 compared to 9,266 thousand of tonnes carried in 2019. Vehicle-kilometres and Tonne-kilometres increased as well in the same period witnessing a general increase in both demand and supply of freight transport in Bosnia and Herzegovina. Most transported goods consist of metal products, crude oil, wood and production of wood, food products, beverage, and tobacco.

Table 12 Goods in road transport [Source: Thematic bulletin. Transport, Agency for Statistics of BH, 2021]

	2012	2013	2014	2015	2016	2017	2018	2019
Pređeni kilometri vozila <i>Vehicle-kilomteres covered, 000</i>	347 894	399 568	457 582	458 147	507 985	586 216	590 509	597 076
Prevezena roba, 000t <i>Goods carried, 000t</i>	6 315	6 608	7 255	8 288	9 377	10 123	9 799	9 266
Tonski kilometri, 000 <i>Tonne-kilometres, 000</i>	2 300 621	2 739 076	3 215 543	3 405 231	4 015 177	4 280 222	4 350 172	4 380 071

According to the National Institute of Statistics, in the last years the total number of registered passenger vehicles has been constantly increasing. The total number of vehicles overpassed 1 million in 2017; this value affects the motorization rate, which is lower than the EU average but higher than other EU enlargement candidate countries.

Table 13 Registered Road motor vehicles [Source: Thematic bulletin. Transport, Agency for Statistics of BH, 2021]

	2012	2013	2014	2015	2016	2017	2018	2019
Ukupno Total	868 732	895 215	921 456	952 598	990 682	1 021 099	1 080 873	1 094 515
Mopedi <i>Mopeds</i>	3 831	3 488	2 665	2 533	2 398	2 768	4 787	5 309
Motocikli <i>Motorcycles</i>	7 861	7 884	7 833	8 234	8 607	9 615	10 552	11 304
Putnička vozila <i>Passenger cars</i>	751 647	776 270	801 253	828 730	861 537	884 569	920 841	940 933
Autobusi / Motor-coach, mini-coach, bus or mini-bus	4 005	4 040	4 130	4 196	4 307	4 394	5 212	4 458
Teretna vozila <i>Goods road motor vehicle</i>	73 999	74 839	76 226	78 043	81 453	84 766	98 593	91 168
Priključna vozila <i>Trailers</i>	21 772	22 920	24 114	25 541	27 098	29 329	33 588	32 766
Ostalo <i>Other</i>	5 617	5 774	5 235	5 321	5 282	5 658	7 300	8 577

1.2.3 Border checkpoints infrastructural and operative characteristics

Bosnia and Herzegovina borders with Croatia to the north, to the south and to the western part, with Serbia to the East, with Montenegro to the South. According to the National Institute of Statistics, most of the cross-border traffic passes a Bosnian-Croatian border checkpoint. The border checkpoints are the following.

Border checkpoints with Croatia:

- Brčko Border Crossing (road M14.1; it continues in Croatia as road 214),
- Orašje Border Crossing (road M1.8; it continues in Croatia as road 55),
- Bosanski Šamac Border Crossing (road E73; it continues in Croatia as regional road E73),
- Granični prelaz BIH Border Crossing, Novi Grad (road A1; it continues in Croatia as road A1),
- Brod Border Crossing (road M14.1; it continues in Croatia as secondary road),
- Gradiska Border Crossing (road M14.1; it continues in Croatia as regional road E661),
- Gradina Donja Border Crossing (road M14; it continues in Croatia as road 47),
- Kozarska Dubica Border Crossing (secondary roads),
- Kostajnica (BIH) Border Crossing (road R475; it continues in Croatia as road 30),
- Novi Grad Border Crossing (road M4; it continues in Croatia as road 6),
- HADŽIN POTOK Border Crossing (secondary roads),
- Izačić Border Crossing (road M5; it continues in Croatia as road 39),
- MGP Prisika Border Crossing (road M16.3; it continues in Croatia as road 217),
- Jovića Most Border Crossing (secondary roads),
- Osoje border crossing (road M15; it continues in Croatia as road 76),
- Grenzübergang Gorica border crossing (road M6; it continues in Croatia as road 60),

- Orahovlje border crossing (road R422; it continues in Croatia as a secondary road),
- Crveni Grm border crossing (road R424; it continues in Croatia as road 222),
- MGP Bijača border crossing (road A1; it continues in Croatia as road E65),
- Doljani border crossing (road M17; it continues in Croatia as road E73),
- Neum II border crossing (road M2/E65; it continues in Croatia as road 8),
- Trebimlja border crossing (secondary road; it continues in Croatia as road 235),
- Ivanica border crossing (road M20; it continues in Croatia as a secondary road).

Border checkpoints Montenegro:

- Zupci border crossing (road R429; it continues in Montenegro as a secondary road),
- Гранични прелаз Аранђелово, Vučija border crossing (road R430; it continues in Montenegro as road P23),
- Klobuk border crossing (road M6; it continues in Montenegro as road M6),
- Deleuša border crossing (road R431; it continues in Montenegro as a secondary road),
- Hum border crossing (road M18; it continues in Montenegro as road M18/E762).

Border checkpoints with Serbia:

- Ustibar border crossing (road R449; continues in Serbia as road 182),
- Rudo border crossing (road R449; continues in Serbia as road 191),
- Vardiste border crossing (road M5; continues in Serbia as road 28),
- Skelani border crossing (road R452; continues in Serbia as road 171),
- Bratunac border crossing (road R454; continues in Serbia as road 28),
- Stari most Zvornik (pedestrian crossing),
- Karakaj border crossing (road M4; continues in Serbia as road 26),
- Šepak border crossing (road M19; continues in Serbia as road 26),
- Popovi border crossing (road R459b; continues in Serbia as road 20),
- Rača border crossing (road M18; continues in Serbia as road 18),
- Gornje Crnjelovo border crossing (secondary roads).

Thanks to the Neum corridor, Bosnia and Herzegovina has access to the sea. This short coastal strip interrupts the land continuity of Croatia. To bypass Neum and avoid the doubled border formalities, Croatia has been constructing a bridge (Pelješac Bridge) that will span the sea between Komarna on the northern mainland and the peninsula of Pelješac, thereby passing entirely through Croatian territory and avoiding any border crossings with Bosnia and Herzegovina.

Table 14 Cross-border traffic of passenger road motor vehicles and passengers on entry² [Source: Thematic bulletin. Transport, Agency for Statistics of BH, 2021]

	Ulaz							
	2012	2013	2014	2015	2016	2017	2018	2019
Promet putničkih vozila Trafice of passenger vehicles	8 674 807	7 841 261	8 201 375	7 849 821	8 558 655	9 054 038	9 546 976	10 309 139
Preko bh-hrvatske granice <i>Bosnian and Herzegovina-Croatia border</i>	6 815 103	6 046 782	5 417 529	5 490 918	6 257 470	6 575 535	7 091 377	7 886 131
Preko bh-srbijanske granice <i>Bosnian and Herzegovina-Serbia border</i>	1 597 702	1 551 744	2 306 952	1 710 414	1 972 544	2 149 603	2 099 086	2 044 140
Preko bh-crnogorske granice <i>Bosnian and Herzegovina-Montenegro border</i>	262 002	242 735	476 894	648 489	328 641	328 900	356 513	378 868
Promet putnika Traffic of passengers	22 721 075	20 590 984	19 736 738	20 526 071	23 038 495	23 035 448	25 105 910	25 379 051
Preko bh-hrvatske granice <i>Bosnian and Herzegovina-Croatia border</i>	17 779 002	15 559 045	14 718 964	14 735 397	16 374 494	15 895 430	18 020 969	18 690 294
Preko bh-srbijanske granice <i>Bosnian and Herzegovina-Serbia border</i>	4 222 014	4 353 421	4 292 482	5 044 086	5 786 911	6 260 387	6 128 902	5 688 180
Preko bh-crnogorske granice <i>Bosnian and Herzegovina-Croatia border</i>	720 059	678 518	725 337	746 588	877 090	879 631	956 749	1 000 577

Main border checkpoints are located along the Main and Regional roads, across the city of Gradiška with Croatia, the checkpoint is located on the Croatian side of the river Sava. Close to this checkpoint a new road connection will link the E661 border with Croatia with a checkpoint on the southern side of the river Sava. Other relevant borders checkpoints, in terms traffics, with Croatia are locate in the cities of Kozarska Dubica, Novi Grad, Velika Kladuša.

Main border checkpoints with Serbia are close to bridges over the river Saba and the River Drina which define the borders for most of its extensions: Raca Bridge in the north, Granicni Prelaz Bridge on the East border, bridge in the municipality of Loznica, Karakaj Border Bridge., etc.

With Montenegro, main border checkpoints are located along the European Road E-762 corresponding to the M18 in the North to the route to Podgorica, along the M6 the Ilino Brdo Border Crossing and along the

² Note: in the last row there is a mistake. The legend may be 'Bosnia and Herzegovina-Montenegro border' instead of 'Bosnia and Herzegovina-Croatia border'.

R429 between Trebigne and the coastal area of the Bay of Kotor.

Table 15 Cross-border traffic of passenger road motor vehicles and passengers on exit³ [Source: Thematic bulletin. Transport, Agency for Statistics of BH, 2021]

	Izlaz							
	2012	2013	2014	2015	2016	2017	2018	2019
Promet putničkih vozila Trafice of passenger vehicles	8 696 762	7 825 536	8 233 920	7 382 608	8 345 649	8 932 232	9 659 613	10 470 712
Preko bh-hrvatske granice <i>Bosnian and Herzegovina-Croatia border</i>	6 837 934	6 047 789	5 386 043	5 403 653	6 113 749	6 570 667	7 258 888	8 018 653
Preko bh-srbijanske granice <i>Bosnian and Herzegovina-Serbia border</i>	1 589 330	1 560 883	2 378 040	1 691 659	1 910 426	2 042 393	2 048 036	2 079 545
Preko bh-crnogorske granice <i>Bosnian and Herzegovina-Montenegro border</i>	269 498	216 864	469 837	287 296	321 474	319 172	352 689	372 514
Promet putnika Traffic of passengers	22 562 760	20 546 990	19 333 756	20 177 907	21 927 519	22 469 885	24 762 668	25 493 542
Preko bh-hrvatske granice <i>Bosnian and Herzegovina-Croatia border</i>	17 817 699	15 496 803	14 387 302	14 478 135	15 629 255	15 750 174	17 767 599	18 794 846
Preko bh-srbijanske granice <i>Bosnian and Herzegovina-Serbia border</i>	4 025 725	4 380 281	4 248 379	4 973 819	5 446 903	5 872 760	6 067 966	5 696 539
Preko bh-crnogorske granice <i>Bosnian and Herzegovina-Croatia border</i>	719 336	669 906	698 075	725 953	851 361	846 951	927 103	1 002 157

Bosnia and Herzegovina are a potential candidate for the enlargement of European Union country and, even if it is not a Schengen area member, Bosnian travellers can enter the Schengen Area without a visa.

1.2.4 Road safety in national and transnational networks

The following table report some data on road safety in Bosnia and Herzegovina. Data are provided by the National Institute of Statistics and shows quite constant trends in the number of accidents between 2012 and 2019 with the highest number registered in 2016 when more than 39 thousand of accidents occurred. In terms of injured person and deaths the heist number was registered between 2015 and 2016 in particular

³ Note: in the last row there is a mistake. The legend may be 'Bosnia and Herzegovina-Montenegro border' instead of 'Bosnia and Herzegovina-Croatia border'.

the number of deaths has slightly decrease compared to 2012 while the number of injured increases of about 1 thousand of units.

Table 16 Road traffic accidents [Source: Thematic bulletin. Transport, Agency for Statistics of BH, 2021]

	2012	2013	2014	2015	2016	2017	2018	2019
Ukupno <i>Total</i>	34 275	35 286	36 159	38 282	39 104	37 357	36 541	34 313
Sa materijalnom štetom <i>With material damage</i>	27 895	28 460	29 277	30 646	31 638	29 960	30 347	27 184

Table 17 Killed and injured persons in road traffic accidents [Source: Thematic bulletin. Transport, Agency for Statistics of BH, 2021]

	2012	2013	2014	2015	2016	2017	2018	2019
Ukupno <i>Total</i>	9 290	9 910	10 214	10 998	11 376	10 312	10 666	10 214
Poginulo <i>Killed</i>	295	337	290	337	318	291	279	257
Ozlijeđeno <i>Injured</i>	8 995	9 573	9 924	10 661	11 058	10 021	10 387	9 957

Looking at monthly trends over the years, the period between June and October indicates the highest number of accidents per month, probably in consequence of the tourism flows for summer holidays.

Table 18 Road traffic accidents by month [Source: Thematic bulletin. Transport, Agency for Statistics of BH, 2021]

	2012	2013	2014	2015	2016	2017	2018	2019
Ukupno <i>Total</i>	34 275	35 286	36 159	38 282	39 104	37 357	36 541	34 313
Januar <i>January</i>	2 880	2 784	2 629	2 760	2 790	2 847	2 796	2 703
Februar <i>February</i>	2 976	2 449	2 122	2 561	2 521	2 343	2 648	2 181
Mart <i>March</i>	2 408	2 450	2 587	2 823	3 017	2 539	2 839	2 568
April <i>April</i>	2 661	2 841	2 775	3 114	3 222	2 861	2 833	2 739
Maj <i>May</i>	2 739	2 880	2 963	3 239	3 349	2 898	2 967	2 568
Juni <i>June</i>	2 777	2 927	3 126	2 966	3 230	3 140	3 139	2 952
Juli <i>July</i>	3 074	3 046	3 302	3 628	3 779	3 732	3 417	3 238
Avgust <i>August</i>	3 274	3 702	3 534	3 622	3 835	3 836	3 650	3 438
Septembar <i>September</i>	2 949	3 084	3 151	3 495	3 511	3 276	3 226	2 898
Oktobar <i>October</i>	3 131	3 010	3 419	3 307	3 504	3 495	3 186	3 080
Novembar <i>November</i>	2 620	2 902	2 985	3 277	2 967	3 086	2 672	2 765
Decembar <i>December</i>	2 786	3 211	3 566	3 490	3 379	3 304	3 168	3 183

1.2.5 ITS applications in national and transnational road networks

The development of the Comprehensive and Core Network, up to the TEN-T standards with the aim of attracting international traffic flows and increasing the regional mobility along the Network, supported by the regional transport cooperation conducted under the umbrella of SEETO has promoted for years the deployment of ITS in Bosnia and Herzegovina. However, so far, no relevant progress has been performed in this respect, in terms of strategic and legal documents for ITS and applications only concern some tunnels and tolling systems follows the provisions of relevant Directives on the level of safety and electronic road tolls. ITS has also been deployed on some newly built motorway sections on Corridor Vc and are being deployed on ongoing motorway projects.

There is no specific ITS Deployment Strategy or Action Plan and the ITS Directive has not been transposed, nor the importance of ITS is acknowledged in the Transport Strategies in force.

Nevertheless, ITS has been mentioned in the following legislative acts: Law on Road Safety in Bosnia and Herzegovina; Rulebook on traffic signalization and signalisation on roads, signalling of works, obstacles on roads, and signalling those official authorities give to traffic users.

1.2.6 Alternative fuel availability usage

According to the Energy Community 2020 Annual Implementation Report, provisions related to the sustainability of biofuels in Bosnia and Herzegovina are still not transposed and the legal framework remains completely non-compliant with Directive 2009/28/EC. The share of renewables in transport is only at 0,44% compared to the objective of 10% in 2020.

1.2.7 Key issues

This paragraph presents the most relevant issues highlighted by the analysis carried out on the road network by type of impact.

The impact of the existing problems on the efficiency of the road network has been therefore measured in terms of accessibility, safety/security, service, sustainability, and capacity.

The main problems or key issues identified with respect to the Bosnia and Herzegovinian road network are list in the following table. In the columns it is possible to know the relationships between each theme and the type of impact.

Table 19 Bosnia and Herzegovina: Identified Key Issues by type of impact.

COUNTRY	KEY ISSUE	ACCESSIBILITY	SAFETY/SECURITY	SERVICE	SUSTAINABILITY	CAPACITY
BOSNIA AND HERZEGOVINA	Very limited extension of the Motorway network					
	Maximum speed on motorway 100-120km/h					
	Lack of capacity in sections candidate to become part of the TEN-T extension					
	Reduction in the number carried by public transport services					
	High (and increasing) motorisation rate					
	No reduction in road accidents over the years					
	Very limiter ITS deployment					
	No legal framework for developing alternative fuel station network					
	Low performance of the Motorways (travel time)					
	Very limiter ITS deployment					

1.3 Montenegro

1.3.1 Road network overview

The overall length of road network in Montenegro is 9,727 km and is made by 6,527 km of asphalted road, 1,885 km of gravelled road, and 1,300 km of earthen or uncategorized roads.

The Montenegrin Road network includes Main Roads (Magistralni putevi), Regional Roads (Regionalni putevi) and Local Roads. Main Roads and Regional Roads represent the 19% of the total length of the network and are all paved with asphalt.

Figure 9 shows road network classification: main roads are represented in blue, regional roads in yellow and section currently under construction in red.

According to the morphology of the land, some of the main roads are very winding creating relevant impacts on safety, average travel speed and travel time. To increase the road capacity, some tunnels has been built and are planned all over the network. In this respect, the Sozina tunnel, is a fundamental link between Podgorica and the port of Bar (the tunnel alone reduced the journey between the two cities by half an hour).



Figure 9 Road network in Montenegro [Source: Transport Development Strategy – Montenegro 2019-2035, Ministry of Transport and Maritime Affairs of Montenegro, 2019]

Table 20 Road network in Montenegro by type [Source: Statistički Godišnjak 2020 SY (MNE – 2020)]

	2015	2016	2017	2018	2019	
Putevi ukupno u km po vrstama kolovoza	8 614	8 625	8 750	9 038	9 249	<i>Roads by type, total in km</i>
Savremeni kolovoz (asfalt)	6 136	6 147	6 274	6 296	6 333	<i>Modern (asphalt)</i>
Tucanik	1 673	1 664	1 654	1 744	1 839	<i>Gravel</i>
Zemljani i nekategorisani	805	814	822	998	1 077	<i>Earthen and un categorized roads</i>

Table 21 Road network in Montenegro by type [Source: Annual statistic of transport storage and communications, MONSTAT, 2021]

	Year		Index
	2019	2020	$\frac{2020}{2019}$
Length of roads by type, in km			
1. Roads (1.1+1.2+1.3)	9 249	9 727	105.2
1.1 Modern road (asphalt)	6 333	6 527	103.1
1.2 Gravel	1 839	1 885	102.5
1.3 Earthen and uncategorized	1 077	1 315	122.1
Number of bridges			
Bridges	532	546	102.6

Montenegro has no operating Motorways, while the Motorway section from Matesevo to Smokovac along the Bar – Boljare is currently under construction. According to this, all international and interurban traffic, both passenger and freight is served by Main Roads and Regional Roads.

Main roads connect the country's most important cities and border crossings and are usually characterized by a single carriageway per direction and a third overtaking lane on sections with steep gradients. This implies that the maximum speed on Main Roads is limited to a maximum of 80 km/h.

Regional roads connect regional centres, feed the main network, and offer access to border crossings and allow a maximum speed of 50km/h.

In consequence of the infrastructural characteristics of the network the performance, the capacity and reliability of road transport is rather limited and travel time are very relevant on the entire network.

The proposal for the extension of the Tran European Transport Networks (formalised in the Regulation (EU) 2016/758 which amends annex III of Regulation (EU) 1315/2013) plan extension of the Mediterranean Core Network Corridor in the territory of Montenegro, in particular in the along the Adriatic-Ionian Motorway that runs along the coast through Bar. According to this the Mediterranean corridor alignment will include several road sections which have yet to be realized and the upgrade to the last mile link to the Core Port of Bar. Upgrades consist mainly in doubling the current carriage from two to four lane.

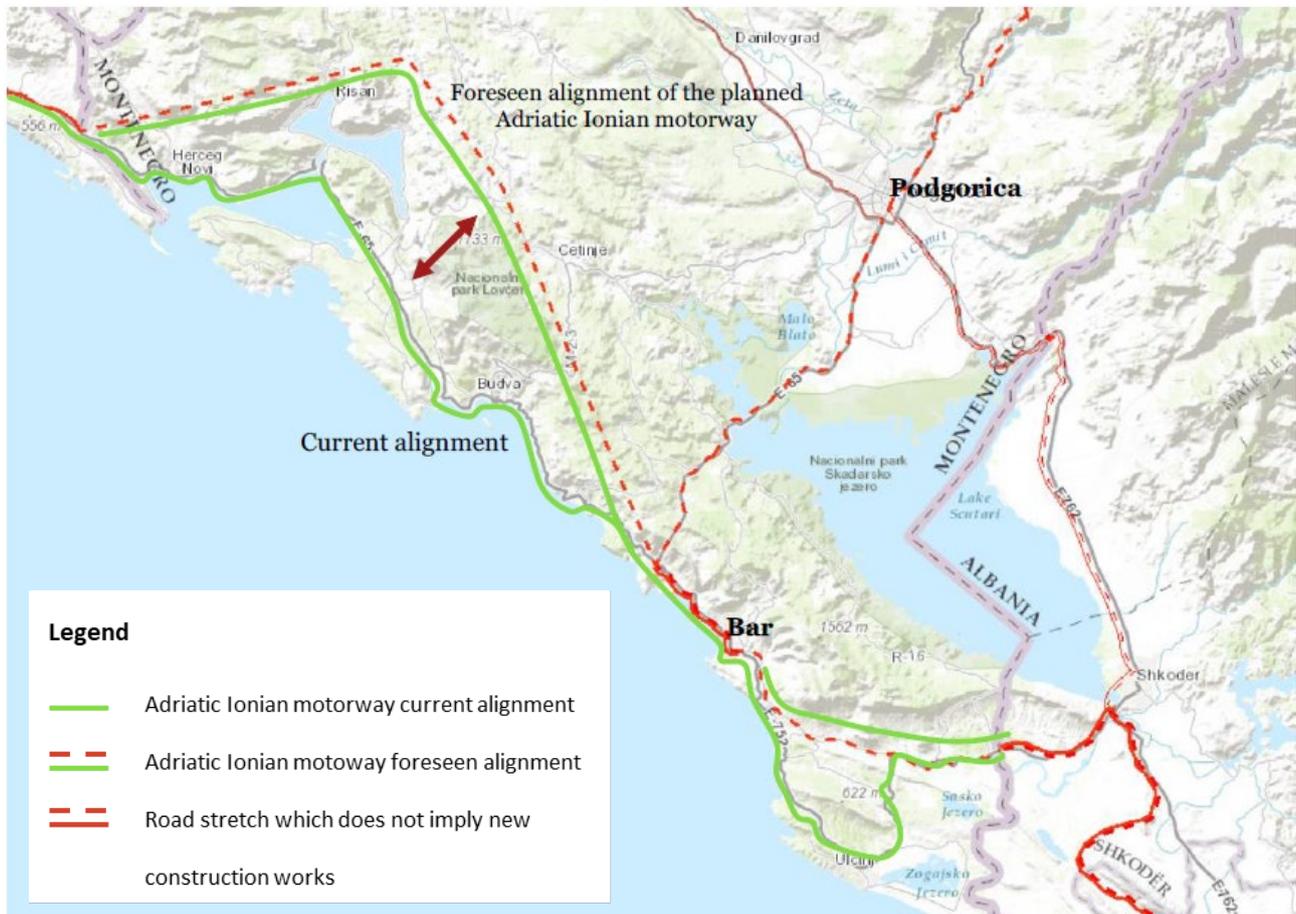


Figure 10 Mediterranean Core Network Corridor alignment. [Source: Study on Mediterranean TEN-T Core Network Corridor 2nd Phase, European Commission, 2018]

1.3.2 Road traffic volumes (passengers and freight)

According to National Statistics Institute (Monstat) the road traffic has been raising in the last years. The total number of passengers travelling on the road network was 7,575 thousand in 2017, 7,618 thousand in 2018 and 7,680 thousand in 2019. Due to the lockdowns, the 2020 all the data dropped: the total of passengers fell from 7,680 thousand to 2,697 thousand, the passenger-km from 114,223 thousand to 29,588 and the total mileage from 17,815 thousand km to 8,150 thousand km.

Table 22 Road passenger transport [Source: Statistički Godišnjak 2020 SY (MNE – 2020)]

2015	2016	2017	2018	2019	
369	358	369	388	385	BUSES
13 382	13 202	13 382	13 916	13 742	Total
					Total number of seats
17 189	18 223	17 944	17 684	17 815	TRANSPORTATION
6 987	7 544	7 575	7 618	7 680	Kilometres travelled, in thous.
					Passengers transported, in thous.
110	114	114	115	114	Passenger-kilometres, in mill.

The same trend can be seen in freight transport with 839,000 tons in 2017, 810,000 in 2018 and 886,000 in 2019. The domestic transport represents the large majority with 828,000 tons compared to international transport, which is about 58,000 tons. The pandemic emergency did not affect the freight transport as for passenger transport and the total good carried counted 800,000 tons in 2020 (730,000 tons in domestic transport and 70,000 in international transport).

Table 23 Road goods transport in Montenegro [Source: Annual statistic of transport storage and communications, MONSTAT, 2021]

A = B + C	Goods carried, in thousands tones	Tonne-kilometres, In thousands	Kilometres made, in thousands
Total (1+2)	800	91 039	4 312
1. National transport	730	58 293	2 008
2. International transport (2.1+2.2)	70	32 746	2 304
2.1 Goods loaded/ unloaded in Montenegro	62	28 637	2 055
2.2 Cross-trade and cabotage	8	4 109	249

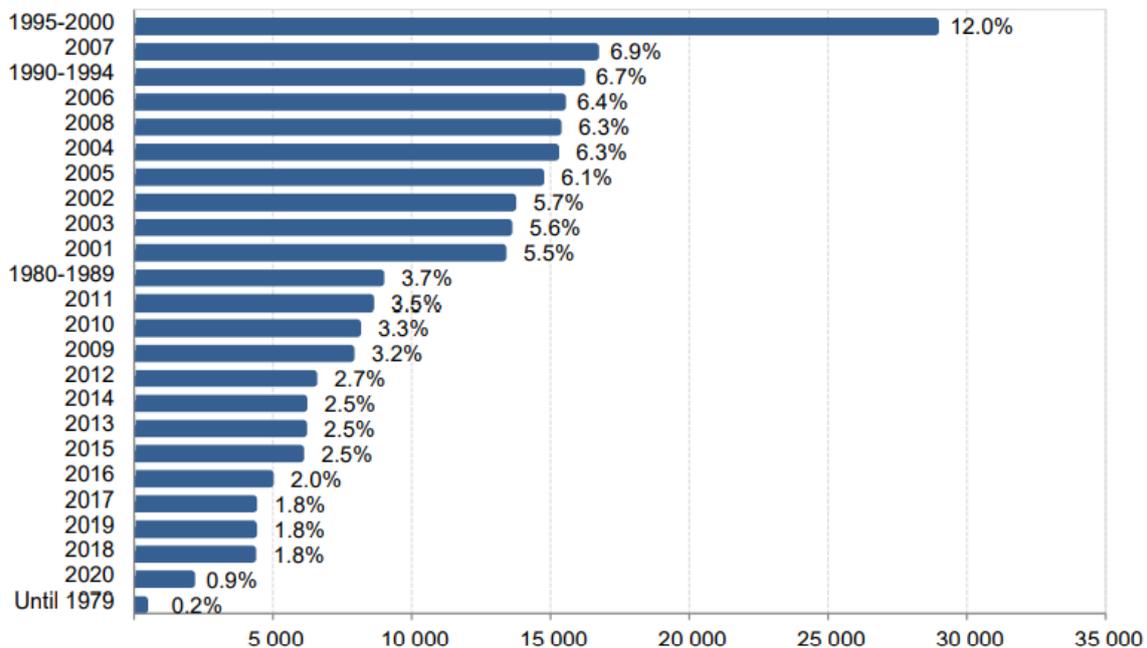
In the last years the number of registered vehicles increased from 198,772 in 2015 to 249,301 in 2019. Passenger cars registered a +24% in five years corresponding to 40 thousand of additional vehicles, while vehicles for the transport of goods increased of 40% in the same period of time.

Table 24 Number of registered road motor vehicles and trailers [Source: Statistički Godišnjak 2020 SY (MNE – 2020)]

	2015	2016	2017	2018	2019
<i>Motorcycles</i>	4 201	4 363	4 744	5 655	6 300
<i>Passenger cars</i>	175 912	184 734	193 242	206 453	217 959
<i>Vans</i>	661	622	562	513	468
<i>Buses</i>	1 261	1 308	1 370	1 459	1 490
<i>Goods road vehicles</i>	12 517	13 469	14 579	16 158	17 494
<i>Special purpose vehicles</i>	835	751	681	636	585
<i>Road tractors</i>	1 163	1 297	1 405	1 562	1 681
<i>Trailers</i>	2 150	2 413	2 594	2 827	3 122
<i>Agricultural tractor</i>	72	141	201	122	202
<i>Total number of vehicle</i>	198 772	209 098	219 378	235 385	249 301

Quite interesting is the age of passenger cars in the country with more than 20% of vehicle registered before the 2000 (more than 20 years old) showing the relevance of very aged vehicle in the fleet.

Figure 11 Number of registered passenger cars by age of vehicle, 2020 [Source: Statistički Godišnjak 2020 SY (MNE – 2020)]



1.3.3 Border checkpoints infrastructural and operative characteristics

Montenegro borders with Croatia to the East sharing part of the coastal area with it, with Bosnia and Herzegovina to the North, with Serbia to the West and with Albania to the South.

Border crossings in Montenegro are currently being managed by the Ministry of the Interior and Police Administration (Border police) and by the Customs Administration.

According to the Transport Development Strategy of Montenegro 2019-2035, although there were signed different agreements with neighbouring countries, and road border crossings exhibit delays, especially in the summer months. Indeed, current infrastructures and border procedures do not seem to be able to cope with average daily peaks, while during seasonal peaks lead daily average road traffic in border crossings doubles or even triples compared to typical days of the year. This clearly affects transit times, which are heavily penalized by additional waiting times to clear customs and passport control in Montenegro's border crossings. This is particularly important for the tourism sector which very relevant for the country economy.

Montenegrin road network is connected to all the neighbouring countries though the following border crossing:

Border crossing with Serbia:

- Pljevlja Municipality (main road M-6; continues in Serbia as national road 29),
- Bijelo Polje Municipality (main road M-2; continues in Serbia as national road 23),
- Vuča border crossing (regional road R-6; continues in Serbia as road 205)
- Rožaje Municipality (main road M-5; continues in Serbia as national road 22).
- border crossing in Rožaje Municipality (regional road R-5; continues in Kosovo as road 106).

Border crossing with Albania:

- Vermosh - Guci border crossing (regional road R-2; continues in Albania as road SH20),
- Pipe – Grabon border crossing (regional road R-27; continues in Albania as road SH20),
- Božaj border crossing (main road M-4; continues in Albania as road SH1)
- Sukobin border crossing (main road M-1; continues in Albania as road SH41).

Border crossing with Croatia:

- Konfin Border Crossing in Herceg Novi Municipality (continues in Croatia as road D516)
- Debeli Brijeg Border Crossing (main road M-1; continues in Croatia as road D8).

Border crossing with Bosnia and Herzegovina:

- Ilino Brdo Border Crossing (main road M-7; continues in Bosnia and Herzegovina as road M-6),
- Vračenići Border Crossing (main road M-9; continues in Bosnia and Herzegovina as road R431),
- Šćepan Polje Border Crossing (main road M-3; continues in Bosnia and Herzegovina as road M-18)
- Metaljka Border Crossing (regional road R-3; continues in Bosnia and Herzegovina as road R-448).

1.3.4 Road safety in national and transnational networks

According to the National Institute of Statistics (MONSTAT), the total of incidents and injuries have increased in recent years. The number of accidents in 2015 was 4,944 while in 2019 the number become 6,210 with an increase of more than 1 thousand of accidents in just one years.

The number of killed has remain quite stable across the years while the number of injured persons increased from 2,173 in 2015 to 2,754 in 2019.

As experienced in other countries, the number of accidents in 2020 decreased to 4,595 due to the reduced traffic in consequence of the COVID-19 emergency.

Table 25 Number of injury accidents in road transport [Source: Statistički Godišnjak 2020 SY (MNE – 2020)]

2015	2016	2017	2018	2019	
4 944	5 229	5 678	5 872	6 210	<i>Number of injury accidents</i>
2 224	2 423	2 711	2 611	2 801	<i>Number of persons killed and persons injured</i>
2 173	2 358	2 648	2 563	2 754	<i>Number of persons injured</i>
51	65	63	48	47	<i>Number of persons killed</i>

1.3.5 ITS application in national and transnational networks

The new Transport Development Strategy Report for Montenegro (November 2017) defines ITS as one of its priority areas. ITS is identified as one of the four priority areas for infrastructure, where the expected outcomes are upgraded services to users, advanced monitoring and management of network operations and performance and safety improvement with infrastructural measures, such as installation of ITS equipment

(VMS, dynamic signage, WIM stations), installation of integrated system for monitoring and information provision of interurban public transport.

According to the Preparation of the Transport Development Strategy - Montenegro, Directive 2010/40/EU has not been implemented and Montenegro does not have a dedicated ITS strategy.

At present, the only Intelligent Transport System implemented in Montenegrin road network is the one planned within the ongoing motorway construction of section Smokovac - Matesevo (Route 4). In that case, ITS has been deployed in Tunnel Sozina and its access road; equipment and functionalities used are in accordance with the relevant EU Directive on tunnels and roads. The tunnel is controlled from the local control centre at Gluhi Do.

1.3.6 Alternative fuel availability usage

The following table and figure show the number of registered motor vehicle in Montenegro. According to this data, the spread of electric vehicle is very limited.

Table 26 Number of registered road motor vehicle by type of motor energy. [Source: Annual statistic of transport storage and communications, MONSTAT, 2021]

Type of motor energy	Year		Index
	2019	2020	$\frac{2020}{2019}$
Total	246 179	237 338	96.4
Eurosuper 95	55 381	49 138	88.7
Eurosuper 98	1 055	481	45.6
Eurodizel	181 629	180 254	99.2
Mixture	16	26	162.5
Auto Gas	7 953	7 238	91.0
Electricity	145	201	138.6

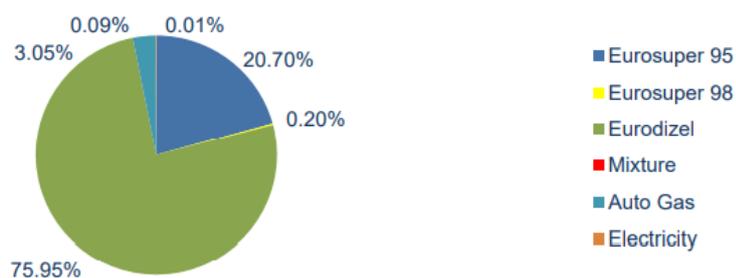


Figure 12 Structure of registered road motor vehicle and trailers by type of motor energy (2020). [Source: Annual statistic of transport storage and communications, MONSTAT, 2021]

1.3.7 Key issues

This paragraph presents the most relevant issues highlighted by the analysis carried out on the road network by type of impact.

The impact of the existing problems on the efficiency of the road network has been therefore measured in terms of accessibility, safety/security, service, sustainability, and capacity.

The main problems or key issues identified with respect to the Montenegrin road network are list in the following table. In the columns it is possible to know the relationships between each theme and the type of impact.

Table 27 Montenegro: Identified Key Issues by type of impact.

COUNTRY	KEY ISSUE	ACCESSIBILITY	SAFETY/SECURITY	SERVICE	SUSTAINABILITY	CAPACITY
MONTENEGRO	No operating Motorway network					
	Speed on road network is limited to a maximum of 80km/h (50km/h on regional roads)					
	Very limited capacity of Primary roads and low level of performance on the network at all					
	Long travel time due to the poor condition of the network					
	Lack of capacity in sections candidate to become part of the TEN-T extension					
	Crossing borders during summer (holiday) causes delays and lack of capacity and affect local tourism					
	Increasing number of accidents and people injured					
	Very limiter ITS deployment					

1.4 Serbia

1.4.1 Road network overview

The overall length of road network in Serbia is 45,220 km and includes National Roads Class I (5,437 km of which 950 km of Highway), National Roads Class II (total: 10,952 km) and Municipal Roads (total: 23,780 km) and other not categorized road for about 5,000 km.

It is estimated that about 40% of the total length of roads belongs to sections above 600 m, and the highest roads are on Kopaonik and Golija (above sea level, about 1,700 m).

A significant part of the roads has obsolete sections (about 2/5), where the roads are made of gravel or earth.

The backbone of the network is the Motorway system (Autoput), which connects all the main cities and the neighbour countries. These 924 km-long is tolled (depending on mileage and vehicle typology) and managed by the Public Enterprise Putevi Srbije (Путеви Србије - Roads of Serbia).

The most important hub is the capital Belgrade, followed by Nis and Novi Sad.

The operating motorways are:

- **A1 Horgoš (Hungarian border) – Preševo (North Macedonian border) – 605.5 km:** This motorway stretches across a distance of 605.5 kilometers, starting at the Horgoš border crossing with Hungary, near Subotica. It passes through several notable cities, including Novi Sad, Belgrade (where it intersects with A3 and A2), Pojate near Kruševac (where it connects with A5), Niš (with an intersection at A4), and continues through Leskovac and Vranje before reaching its endpoint at the Preševo border crossing with North Macedonia. It is a segment of the European route E75.
- **A2 Beograd – Požega – 118.3 km:** A2 is currently under construction and is intended to link Belgrade with Montenegro. The proposed route includes Obrenovac, Čačak, Požega, Arilje, Ivanjica, and ultimately terminates at Boljare, at the border with Montenegro. As of 2021, the Čačak - Požega section is under construction, while the Požega - Boljare section is still in the planning stages.
- **A3 Batrovci (Croatian border) – Beograd – 95.4 km:** 3 extends for a length of 95.4 kilometers, starting at the Batrovci border crossing with Croatia. It passes through Sremska Mitrovica and Ruma before concluding at the Dobanovci interchange near Belgrade.
- **A4 Niš – Gradina (Bulgarian border crossing) – 105.4 km:** A4 is an operational motorway that links the A1 motorway near Niš to the Gradina border crossing with Bulgaria. It forms part of European route E80.

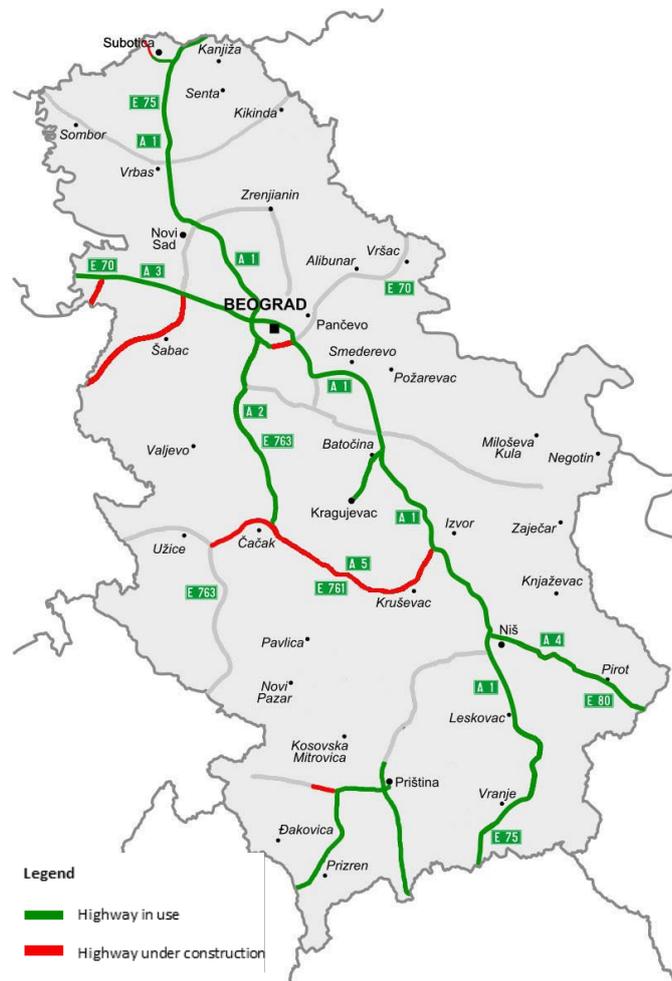


Figure 13 Serbian highway system. [Source: Wikipedia.org]

Serbia is crossed by the Pan-European corridor network in particular:

- **Corridor X** with its branches Xb (Belgrade-Budapest) and Xc, (Nis-Sofia), which is the most significant road and railway route in the Republic of Serbia. It is defined as the part of Southeast multimodal axis in the HLG Final Report and a part the Core Regional Transport Network (hereinafter: Core Network), and it connects Austria/Hungary, Slovenia/Croatia, the Republic of Serbia and Bulgaria/Macedonia/Greece. 792 km of Serbian 'roads overlap with Corridor X
- **Corridor VII** (the Danube River) which connects Central Europe through the Republic of Serbia with the Black Sea, and a part of the Southeast multimodal axis. 600 km of Serbian 'roads overlap with Corridor VII

The proposal for the extension of the Tran European Transport Networks (formalised in the Regulation (EU) 2016/758 which amends annex III of Regulation (EU) 1315/2013) plan extension of the Mediterranean Core Network Corridor in the territory of Serbia, in particular in the section Batrovci-Dobanovci-Novi Beograd, which overlaps to Pan-European Corridor X (E70).

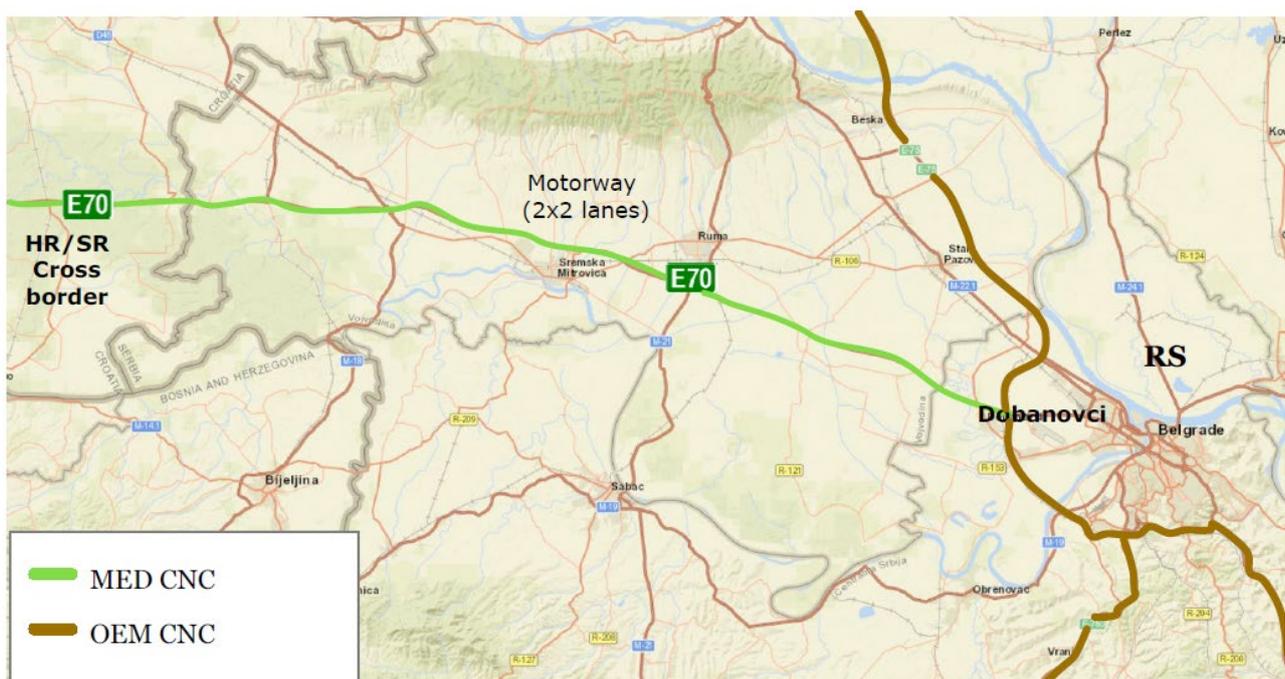


Figure 14 Serbian road alignment: intersection between Mediterranean CNC and Orient East Med. [Source: Study on Mediterranean TEN-T Core Network Corridor 2nd Phase, European Commission, 2018]

In this respect, the Study on Mediterranean TEN-T Core Network Corridor describe the compliance of the network according to the TEN-T standards and highlighted the following issues:

- the Mediterranean Corridor alignment doesn't cross Belgrade urban node.
- the road section Batrovci-Dobanovci is a full motorway with a total length of 102 km and maximum operating speed of about 120 km/h.
- considering current and foreseen traffic flows (as reported in REBIS study), no future interventions or upgrading works are needed on this stretch.
- specific interventions are needed along the road sections around Belgrade, part of the OEM

Corridor concerning the following bottlenecked sections (SEETO and REBIS study lists):

- Dobanovci-Novi Beograd
- Novi Beograd-Belgrade
- Belgrade- Vrcin
- These above sections are those with the highest AADT (Average Annual Daily Traffic) in the entire Pan European Corridor X, with more than 51.920 vehicles/day⁴ and a forecasted traffic flows which may exceed 60.000 vehicles/day by 2030.

1.4.2 Road traffic volumes (passengers and freight)

The number of passengers on Serbian road slightly declines in the last five years from 65,771 in 2015 to 63,013 in 2019. On the other hand, the passenger-km increased showing that the average length of road trips increased.

The transported food increase rather constantly over the years from 26,682 tons in 2015 to 34,758 in 2019.

Table 28 Passengers and goods transport [Source: Statistical Pocketbook of the Republic of Serbia, 2021]

	2015	2016	2017	2018	2019
Transported passengers, thousand ¹⁾	65 771	65 247	60 930	63 408	63 013
Passenger km, mill. ¹⁾	7 752	7 728	7 835	8 301	8 148
Transported goods, thousand t ²⁾	26 682	29 428	30 003	32 371	34 758
Tonne kilometres, mill. ²⁾	8 015	9 266	10 042	11 266	12 771

¹⁾ City transport excluded.

²⁾ Air transport excluded.

According to the Serbian Statistical Office, the total number of registered passengers' vehicles in 2019 amounted to 2,083,753 passenger cars, 10,441 buses and 241,241 freight vehicles. Registered vehicles have been constantly increasing in the last years as well as the motorization rate.

Table 29. Register of road, motor vehicles and trailers and semi-trailers [Source: Statistical Pocketbook of the Republic of Serbia, 2021]

	2015	2016	2017	2018	2019
Mopeds	24 845	24 384	24 837	24 075	32 504
Motorcycles	39 396	40 007	41 596	38 315	39 515
Passenger cars	1 834 890	1 888 295	1 968 787	1 999 753	2 083 753
Buses, motor coaches	9 482	9 626	9 929	9 880	10 441
Freight vehicles	139 886	140 110	223 629	228 900	241 241
Road tractors	14 388	15 414
Trailers and semi-trailers	38 551	38 812	154 310	154 115	83 971
Special purpose motor vehicles	7 052	8 644	9 439	8 979	4 586

⁴ <http://www.putevi-srbije.rs/images/pdf/brojanje/2016/tabela-saobracajnog-opretecnenja-na-drzavnim-putevima-IA-reda.pdf>

1.4.3 Border checkpoints infrastructural and operative characteristics

Serbia is a candidate for the enlargement of European Union country and, even if it is not a Schengen area member, Serbian travellers can enter the Schengen Area without a visa. After the Montenegrin independence, Serbia became a landlocked country.

The country borders with Hungary to the North, with Romania to the North-East, with Bulgaria to the South-East, with North Macedonia to the South, with Montenegro to the South-West and with Bosnia and Herzegovina and Croatia to the West.

Serbian road network is connected to all the neighbouring countries through the following border checkpoints:

Border with Hungary:

- Horgos - Roeszke border crossing (Motorway A1, which continues in Hungary as Motorway M5),
- Kelebija border crossing (national road 11, which continues in Hungary as national road 53),
- Bački Breg-Hercegszántó border crossing (national road 15, which continues in Hungary as national road 51).

Border with Romania:

- Nakovo border crossing (national road 15, which continues in Romania as national road N59E),
- border crossing at Jimbolia (national road 12, which continues in Romania as national road DN59A),
- Vatin cross border (national road 10, which continues in Romania as national road DN59),
- Kaluđerovo border crossing border (national road 18, which continues in Romania as national road DN57C),
- border crossing at Đerdap I (Iron Gate I Hydroelectric Power Station on the Danube River; national road 35, which continues in Romania as national road DN6A),
- border crossing at Đerdap II (Iron Gate II Hydroelectric Power Station on the Danube River; national road 168, which continues in Romania as national road DN56B).

Border with Bulgaria:

- Mokranje border crossing (national road 33, which continues in Bulgaria as national road 12),
- Vrška Čuka border crossing (national road 36, which continues in Bulgaria as national road 14),
- Gradina border crossing (Motorway A4, which continues in Bulgaria as national road 8).

Border with North Macedonia:

- Preševo border crossing (Motorway A1, which continues in North Macedonia as Motorway A1).

Border with Serbia:

- border crossing at Mucibaba (national road 42, which continues in Kosovo as road 42),
- border crossing at Bela Zemlja (national road 41, which continues in Kosovo as road M-25.3),
- Mutivode border crossing (national road 39, which continues in Kosovo as road M-9),
- Merdare border crossing (national road 35, which continues in Kosovo as road M-25),
- border crossing at Jarinjë (national road 31, which continues in Kosovo as road M-22.3),
- Brnjak integrated border crossing (national road 32, which continues in Kosovo as road M-2).

Border with Montenegro:

- border crossing in Pljevlja Municipality (national road 29, which continues in Montenegro as main road M-6),
- in Bijelo Polje Municipality (national road 23, which continues in Montenegro as main road M-2),
- Vuča border crossing (road 205, which continues in Montenegro as regional road R-6)
- in Rožaje Municipality (national road 22, which continues in Montenegro as main road M-5).

Border with Bosnia and Herzegovina:

- Uvac border crossing (national road 191, which continues in Bosnia and Herzegovina as road R449),
- Kotroman border crossing (national road 28, which continues in Bosnia and Herzegovina as road M5)
- Bajina Bašta border crossing (national road 172, which continues in Bosnia and Herzegovina as road R454),
- Ljubovija border crossing (national road 28, which continues in Bosnia and Herzegovina as road R453),
- Mali Zvorkik border crossing (national road 28, which continues in Bosnia and Herzegovina as roads M-4 and M19),
- Trbušnica border crossing (national road 27, which continues in Bosnia and Herzegovina as roads M-14.1 and M19),
- Srpski Badovinci (national road 20, which continues in Bosnia and Herzegovina as road R459),
- Sremska Rača border crossing (national road 18, which continues in Bosnia and Herzegovina as road M18).

Border with Croatia:

- Batrovci border crossing (Motorway A3, which continues in Croatia as Motorway A3),
- Šid border crossing (national road 120, which continues in Croatia as road D46),
- Bačka Palanka border crossing (national road 108, which continues in Croatia as road D2)
- Bogojevo border crossing (national road 17, which continues in Croatia as road D213),
- Bezdan border crossing (national road 16, which continues in Croatia as road D212).

Table 30 below, based on cross-border traffic data from 2015 to 2019, shows an important increase for both passenger cars and freight vehicles.

Table 30 Cross-border traffic of road motor vehicles entered 2015-2019 [Source: Statistical Pocketbook of the Republic of Serbia, 2021]

Passenger cars	6 742 234	7 726 862	7 790 271	9 612 089	9 494 314
Buses, motor coaches	145 976	146 554	153 329	177 820	177 496
Motorcycles	8 539	10 378	10 852	13 551	13 000
Freight vehicles	482 420	536 383	590 297	631 907	664 663

1.4.4 Road safety in national and transnational networks

Serbia registered an overall decrease in the number of road deaths in 2018. According to National Statistics, 546 were killed in accidents in 2018 with a reduction of 5.7% compared to 2017. In 2017, there was as well a reduction of the deaths by 4.6% compared to 2016.

The longer-term trend for road deaths in Serbia has shown significant progress between 2000 and 2018, with a reduction of 48% in the number of annual road fatalities. In 2018, 7.8 traffic deaths per 100 000 inhabitants were recorded, compared to 13.9 in 2000.

As shown in the figure below, the number of injuries on roads has slightly increased between 2002 and 2008 and then it registered only small variation.

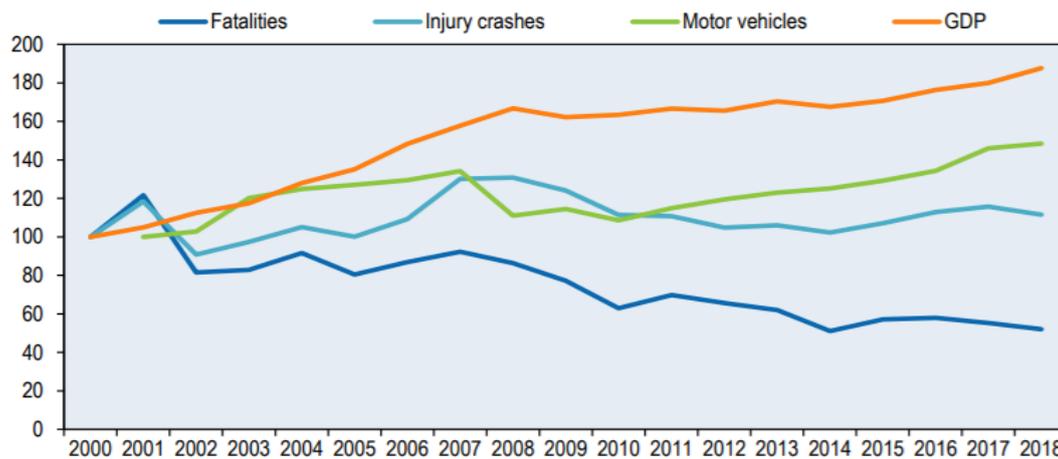


Figure 15 Road safety, vehicle stock and GDP trends (index 2000=100) [Source: Road Safety Annual Report, OECD, 2019]

This is also clear by looking and the number of accidents occurred on Serbian road which show a very low decrease in the last five years.

Table 31. Traffic accidents with casualties. [Source: Statistical Pocketbook of the Republic of Serbia, 2021]

Road accidents, number	13 637	14 382	14 691	14 142	14 134
Casualties (persons killed and injured)	19 909	21 212	21 717	21 198	20 725

1.4.5 ITS applications in national and transnational road networks

There is a national strategy for the development of rail, road inland waterways, air and intermodal transport 2008-2015 recognizing the importance of deploying ITS, including the need for a dedicated ITS Strategy to define competent authority, action plan and funding sources.

To date Serbia completed a draft version of “ITS Strategy for Serbia” in 2017, which was discussed to some extent but not officially adopted. The document contains all elements in accordance with Directive 2010/40 and the European ITS action plan. The latest achievement regarding ITS in Serbia is the adoption of a new law on roads (May 2018), where a definition of ITS system and interoperability is given, together with priority areas and actions. The law also defines tunnel safety advisor, toll collection and European Electronic Toll Collection and European Electronic Toll Service Provider

Currently, ITS has been and is being implemented only on some sections of Corridor X. and this concern mainly the toll payment system.

1.4.6 Alternative fuel availability usage

According to the Energy Community 2020 Annual Implementation Report, in December 2019, Serbia adopted the necessary secondary legislation on criteria for biofuels and bioliquids. The share of renewable energy sources in transport remains low (1,16% in 2018 while the target for 2020 is 10%).

1.4.7 Key issues

This paragraph presents the most relevant issues highlighted by the analysis carried out on the road network by type of impact.

The impact of the existing problems on the efficiency of the road network has been therefore measured in terms of accessibility, safety/security, service, sustainability, and capacity.

The main problems or key issues identified with respect to the Serbian road network are list in the following table. In the columns it is possible to know the relationships between each theme and the type of impact.

Table 32 Serbia; Identified Key Issues by type of impact.

COUNTRY	KEY ISSUE	ACCESSIBILITY	SAFETY/SECURITY	SERVICE	SUSTAINABILITY	CAPACITY
SERBIA	Obsolete road sections (roads made of gravel or earth) for about 2/5 of the network					
	Very limited extension of the Motorway network					
	Lack of capacity in sections candidate to become part of the TEN-T extension					
	Very limiter ITS deployment					

1.5 Croatia

1.5.1 Road network overview

Road network in the Republic of Croatia extends for 26,953 km and comprises approximately 1,400 km of Motorways, 7097 km of State Roads, 9,498 km of county roads, and 8,937 km of Local Roads, as defined by the decision of the Government of the Republic of Croatia on the Classification of Public Roads.

The backbone of the road system is represented by the Motorway network which experienced a rapid increase in the last decades, especially from 2000 onwards. In 2000 the Croatian Motorway network was just above 400km while in 2005 it was already 800km and continued to growth up to 2013 when 1200km of length was reached. From 2013 to 2019 infrastructural projects increased the network of another 200km.

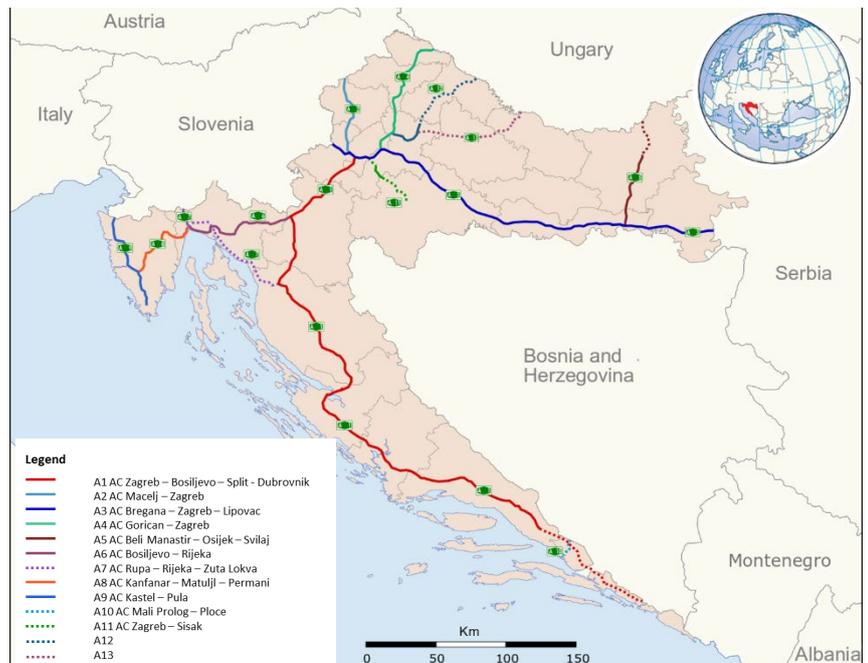


Figure 16 Motorway network of Croatia. [Source: Wikipedia.org, Author: Jeremiah21]

Motorways in Croatia are operated by 4 companies: Hrvatske autoceste d.o.o. which manage Motorway A1, A3, A4, A5, A10 and A11; Bina-Istra d.d. which operates the so-called Istrian Y – A8 and A9; Autocesta Rijeka-Zagreb d.d. which manage Motorway A6, part of A1 and A7, the Krk Bridge and part of D6 State Road from Novigrad to Netretić); Autocesta Zagreb-Macelj d.o.o which operates on Motorway A2.

The Motorways are tolled according to vehicle category.

As part of the European Union, Croatia includes some section of the European TEN-T network, in particular, Vb Mediterranean Corridor, the Vc part of the comprehensive network and the X and Xa respectively part of the core and comprehensive TEN-T network.

The Motorway network include the following sections:

- **A1** Zagreb - Metković – 481 km.
- **A2** Zagreb – Macelj – 60 km.
- **A3** Bregana – Lipovac – 306 km.
- **A4** Zagreb – Goričan – 97 km.
- **A5** Osijek – Svilaj – 59 km.
- **A6** Bosiljevo – Orehovica – 81 km.
- **A7** Rupa (Slovenian border) - Rijeka – Križišće – 28 km;
- **A8** Kanfanar – Matulji – 64 km.

- **A9** Kaštel – Pula – 77 km.
- **A10** Bosnian border - Ploče interchange – 8.5 km.
- **A11** Zagreb – Sisak – 33 km.

Croatian road infrastructure on above listed corridors is composed by following motorway network:

- A2 motorway which is a part of TEN-T comprehensive network – Pan European corridor Xa,
- A4, A1 (Zagreb- Bosiljevo 2) and A6 (Bosiljevo 2-Rijeka) which are part of TEN-T Mediterranean Corridor – Pan European corridor Vb,
- A5 and A10 which are part of TEN-T comprehensive network – Pan European corridor Vc,
- A3 motorway which is part of TEN-T core network - Pan European corridor X.

According to Transport Development Strategy if the Republic of Croatia 2014-2030, Croatia's accession to the European Union on 1 July 2013 has significantly changed its status and importance within the new European community and redefined its political relations with other countries in the neighbourhood.

As an EU member Croatia is obliged to harmonize its development strategy documents and to implement specific guidelines concerning further road infrastructure development.

Regarding its integration in international traffic, it should be emphasized that Croatia is already today, with its highly developed motorway network (90% constructed), close to high European standards regarding international road connections. Due to the heterogeneity of transnational networks, one of the most important tasks is the elimination of border bottlenecks.

1.5.2 Road traffic volumes (passengers and freight)

According to the Croatian Statistical Office, the total number of registered vehicles increased in the last decade. As shown in the tables below after a fall due to the economic crisis of 2008, the last years saw a new rise of vehicle registration and in 2017 the total registered vehicles overcome the pre-crisis period.

On the other hand, vehicle for goods transport decreased in number after the 2008 crisis and so far, the pre-crisis values have not been recorded yet.

Table 33 Registered Road motor vehicles [Source: Statistical Yearbook of the Republic of Croatia, Croatian Bureau of Statics, 2018]

	Ukupno Total	Od ukupnoga Out of total					
		motocikli Motorcycles	osobna vozila Passenger cars		kombinirana vozila Light vans	autobusi Buses	teretna vozila Goods vehicles
			ukupno Total	fizičke osobe Natural persons			
2008.	2 021 936	63 357	1 535 280	1 365 228	9 597 ¹⁾	5 099	170 704
2009.	2 005 210	63 691	1 532 549	1 360 382	...	5 071	164 761
2010.	1 969 587	62 210	1 515 449	1 348 236	...	4 877	157 731
2011.	1 969 405	62 876	1 518 278	1 353 252	...	4 841	154 884
2012.	1 863 741	58 006	1 445 220	1 290 775	...	4 655	141 567
2013.	1 869 370	58 311	1 448 299	1 302 376	...	4 789	141 491
2014.	1 899 538	59 643	1 474 495	1 331 002	...	5 040	143 660
2015.	1 929 726	61 208	1 499 802	1 355 517	...	5 276	149 006
2016.	1 996 056	65 366 ¹⁾	1 552 904	1 402 763	...	5 513	146 230 ¹⁾
2017.	2 056 127	69 148	1 596 087	1 436 667	...	5 698	156 724

In accordance with vehicle registration statistics, the passenger carried by car reduced from about 62 thousand in 2008 to just below 50 thousand in 2017. Same decrease is registered for freight transport in tons as show by the table below.

Table 34 Passengers carried (thousands) [Source: Statistical Yearbook of the Republic of Croatia, Croatian Bureau of Statics, 2018]

	železnički prijevoz ¹⁾ Railway transport ¹⁾	cestovni prijevoz Road transport
2008.	70 961	62 064
2009.	73 545	58 493
2010.	69 564	56 419
2011.	49 983	52 561
2012.	27 669	52 293
2013.	24 265	54 292
2014.	21 926	54 000
2015.	21 683	52 126
2016.	20 742	50 423
2017.	19 832	49 561

Table 35. Good carried (thousands of tons) [Source: Statistical Yearbook of the Republic of Croatia, Croatian Bureau of Statics, 2018]

	železnički prijevoz Railway transport	cestovni prijevoz Road transport
2008.	14 851	110 812
2009.	11 651	92 847
2010.	12 203	74 967
2011.	11 794	74 645
2012.	11 088	65 439
2013.	10 661	67 500
2014.	10 389	66 146
2015.	9 939	66 491
2016.	9 985	72 503
2017.	12 178	72 329

Elaborations on traffic flows realised by the National Traffic Model (NTM), show quite high level of service all over the network (figure below) and the ratio between volumes and provided capacities of the motorway network shows some critical areas around main urban nodes. However, during the touristic season the transport system of the agglomerations in general and of Zagreb reaches the capacity limits.

The figure shows the volume/capacity ratio for the off-season conditions and the conditions in the summer season. Volume/capacity ratio levels above 75% (shown in red) are critical, potentially bearing the risk of congestion and traffic breakdowns at peak hours.

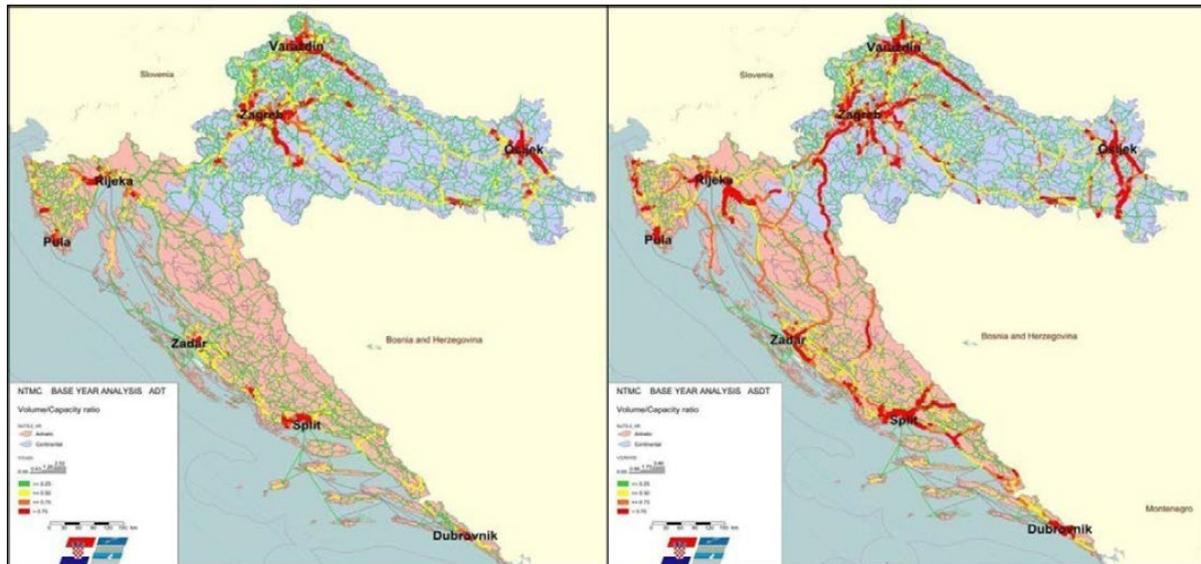


Figure 17 Road traffic volume off peak period (left) and seasonal period (right) [Source: NTM for the Republic of Croatia]

1.5.3 Border checkpoints infrastructural and operative characteristics

Croatia is EU country but not a Schengen area member. With its distinguishing shape, the Land of Croats shares borders with Slovenia to the North, with Hungary to the North-East, with Bosnia and Herzegovina and Montenegro to the South.

In the southern end, within the Dubrovnik-Neretva County (Dubrovačko-neretvanska županija) the Bosnian and Herzegovinian short Neum corridor interrupts the land continuity. Part of the route connecting the County with the rest of the Croatian territory crosses the territory of Bosnia and Herzegovina, which is not a member of the EU. The issue of having to cross the territory of Bosnia and Herzegovina has so far been Croatia's problem, but with Croatia's accession to the EU this matter gains wider importance since traffic taking place in Croatia involves also crossing non-EU territory. To bypass the doubled border formalities, Croatia has been constructing a bridge (Pelješac Bridge) that will span the sea between Komarna on the northern mainland and the peninsula of Pelješac, thereby passing entirely through Croatian territory and avoiding any border crossings with Bosnia and Herzegovina.

The main border crossing checkpoints are:

Border with Hungary:

- Goričan border crossing (national road D3, which continues in Hungary as road 7),
- Gola border crossing (national road D41, which continues in Hungary as road 681),
- Terezino Polje border crossing (national road D5, which continues in Hungary as road 6),
- Donji Miholjac border crossing (national road D53, which continues in Hungary as road 58),
- Baranjsko Petrovo Selo border crossing (national road D211, which continues in Hungary as road 5708), Duboševica border crossing (national road D7, which continues in Hungary as road 56).

Border with Serbia:

- Batina border crossing (national road D212, which continues in Serbia as road 16),

- Ilok border crossing (national road D2, which continues in Serbia as road 108),
- Tovarnik border crossing (national road D46, which continues in Serbia as road 120),
- Bajakovo border crossing (Motorway A3, which continues in Serbia as Motorway A3).

Border with Bosnia and Herzegovina:

- Gunja border crossing (national road D214, which continues in Bosnia and Herzegovina - towards Brčko District-as Road R-460),
- Županja border crossing (national road D55, which continues in Bosnia and Herzegovina as road M113),
- Slavonski Šamac border crossing (national road D7, which continues in Bosnia and Herzegovina as road M17),
- Slavonski Brod border crossing (national road D53, which continues in Bosnia and Herzegovina as road M14.1),
- Stara Gradiška border crossing (national road D5, which continues in Bosnia and Herzegovina as road M16),
- Gradina Donja border crossing (national road D47, which continues in Bosnia and Herzegovina as road M14),
- Hrvatska Dubica border crossing (local roads),
- Kostajnica border crossing (national road D30, which continues in Bosnia and Herzegovina as road M14),
- Matijevići border crossing (national road D6, which continues in Bosnia and Herzegovina as road M4),
- Maljevac border crossing (national road D16, which continues in Bosnia and Herzegovina as roads M4.2 and R400),
- Ličko Petrovo Selo border crossing (national road D217, which continues in Bosnia and Herzegovina as road M102),
- Užljebić border crossing (national road D218, which continues in Bosnia and Herzegovina as road M11),
- border crossing at Strmica (national road D33, which continues in Bosnia and Herzegovina as road M104),
- border crossing in Sinj Municipality (national road D219, which continues in Bosnia and Herzegovina as road R-416a),
- Kamensko border crossing (national road D220, which continues in Bosnia and Herzegovina as road M16),
- Cera border crossing (road 6156, which continues in Bosnia and Herzegovina as local roads),
- Vinjani Gornji border crossing (national road D76, which continues in Bosnia and Herzegovina as road M-15),
- Vinjani Donji border crossing (national road D60, which continues in Bosnia and Herzegovina as roads M-230 and M6),
- Nova Sela border crossing (Motorway A10, which continues in Bosnia and Herzegovina as Motorway A1),
- Metković border crossing (national road D9, which continues in Bosnia and Herzegovina as roads M-17 and M-115),
- Klek border crossing (national road D8, which continues in Bosnia and Herzegovina as road M-2),

- Zaton Doli border crossing (national road D8, which continues in Bosnia and Herzegovina as road M-2),
- Čepikuće (national road D235, which continues in Bosnia and Herzegovina as local road),
- Slano border crossing (road 6232, which continues in Bosnia and Herzegovina as road M-428),
- Brgat Gornji border crossing (national road D223, which continues in Bosnia and Herzegovina as road M-20).

Border with Montenegro:

- Karasovići border crossing (national road D8, which continues in Montenegro as road M-1),
- Vitaljina border crossing (national road D516, which continues in Montenegro as local road).

Border with Slovenia:

- Plovanja border crossing (national road D200, short connection branch of Motorway A9, which continues in Slovenia as national road 111),
- Kastel border crossing (national road D510, short connection branch of Motorway A9, which continues in Slovenia as national road 11),
- Sočerga border crossing (national road D201, which continues in Slovenia as national road 208),
- Pasjak (national road D8, which continues in Slovenia as national road 7),
- Rupa border crossing (Motorway A7, which continues in Slovenia as national road 6),
- Prezid border crossing (national road D32, which continues in Slovenia as national road 213),
- Brod na Kupi border crossing (national road D203, which continues in Slovenia as national road 106),
- Pribanjci border crossing (national road D204, which continues in Slovenia as national road 218),
- Jurovski brod border crossing (national road D6, which continues in Slovenia as national road 105),
- Bregana naselje border crossing (national road D231, which continues in Slovenia as road 675),
- Bregana border crossing (Motorway A3, which continues in Slovenia as Motorway A2),
- Harmica border crossing (national road D225, which continues in Slovenia as road 420),
- Hum na Sutli border crossing (national road D206, which continues in Slovenia as road 432),
- Lupinjak border crossing (national road D207, which continues in Slovenia as national road 107),
- Macelj border crossing (Motorway A2, which continues in Slovenia as Motorway A4),
- Zavrč border crossing (national road D2, which continues in Slovenia as road 228),
- Trnovec border crossing (national road D208, which continues in Slovenia as national road 2),
- Banfi border crossing (national road D227, which continues in Slovenia as road 727),
- Mursko Središće border crossing (national road D209, which continues in Slovenia as road 109).

The following tables show the cross-border traffic volumes of passenger by mode of transport and by mean.

Table 36. Cross-border traffic of passengers, entry (thousands) [Source: Statistical Yearbook of the Republic of Croatia, Croatian Bureau of Statics, 2018]

	Ukupno <i>Total</i>	Cestovni promet <i>Road traffic</i>	Željeznički promet <i>Railway traffic</i>	Promet na unutarnjim vodnim putovima <i>Inland waterway traffic</i>	Pomorski promet <i>Maritime traffic</i>	Zračni promet <i>Air traffic</i>
2008.	75 484	71 334	734	18	1 340	2 058
2009.	70 101	66 014	751	17	1 364	1 955
2010.	71 089	66 743	670	19	1 513	2 144
2011.	70 615	66 040	653	24	1 574	2 325
2012.	66 283	61 667	578	27	1 524	2 487
2013.	68 242	63 522	434	27	1 596	2 663
2014.	73 112	68 495	392	33	1 356	2 835
2015.	79 648	74 812	339	32	1 389	3 075
2016.	81 631	76 295	375	31	1 441	3 489
2017.	83 475	77 748	283	33	1 258	4 153

Table 37. Road cross-border traffic of passengers, motor vehicles entry (thousands) [Source: Statistical Yearbook of the Republic of Croatia, Croatian Bureau of Statics, 2018]

	Registra- cija vozila	Ulaz <i>Entry</i>										Vehicle's registra- tion
		2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.	2016.	2017.	
Putnička vozila		22 477	23 296	21 759	21 587	20 603	21 053	21 938	23 112	24 333	25 414	<i>Passenger vehicles</i>
	Domaća Strana	7 716 14 761	8 132 15 164	7 511 14 248	7 163 14 424	6 908 13 695	7 118 13 935	7 545 14 394	7 720 15 392	8 054 16 279	8 539 16 875	
Osobna vozila		22 181	23 015	21 486	21 314	20 338	20 775	21 641	22 810	24 037	25 088	<i>Passenger cars</i>
	Domaća Strana	7 623 14 558	8 043 14 972	7 430 14 056	7 087 14 228	6 836 13 503	7 039 13 736	7 457 14 183	7 634 15 176	7 971 16 066	8 446 16 642	
Autobusi		296	281	273	272	265	278	298	301	296	326	<i>Buses</i>
	Domaća Strana	93 203	89 192	81 192	76 196	73 192	79 199	87 210	86 216	83 214	93 233	

1.5.4 Road safety in national and transnational networks

Figures provided by the National Statistical office and referred to a ten-year period between 2008 and 2017 show the reduction in the number of death and injured persons due to road accidents. Deaths reduce from 664 in 2008 to 331 in 2017, while injured persons were 22,395 thousand in 2008 and in 2017 have reduces to 14,608.

The following Tables show some statistics about road traffic accidents and involved people:

Table 38. Drivers and road traffic accidents [Source: Statistical Yearbook of the Republic of Croatia, Croatian Bureau of Statics, 2018]

	Vozači <i>Drivers</i>	Prometne nesreće s nastradalim osobama <i>Traffic accidents involving personal injury</i>	Poginuli i ozlijeđeni <i>Killed and injured persons</i>		
			ukupno <i>Total</i>	poginuli <i>Killed</i>	ozlijeđeni <i>Injured</i>
2008.	2 179 514	16 283	23 059	664	22 395
2009.	2 208 621	15 730	22 471	548	21 923
2010.	2 233 963	13 272	18 759	426	18 333
2011.	2 250 877	13 228	18 483	418	18 065
2012.	2 267 892	11 773	16 403	393	16 010
2013.	2 287 341	11 225	15 642	368	15 274
2014.	2 301 463	10 607	14 530	308	14 222
2015.	2 310 515	11 038	15 372	348	15 024
2016.	2 325 157	10 779	14 903	307	14 596
2017.	2 337 087	10 939	14 939	331	14 608

Looking at road accidents statistics for category of vehicle it is notable the constant number of bicycle riders involved in accident every year, while all other categories show quite common trends in reducing the absolute values.

Table 39. Injured persons in road traffic accidents, by categories [Source: Statistical Yearbook of the Republic of Croatia, Croatian Bureau of Statics, 2018]

	Ukupno <i>Total</i>	Vozači osobnih automobila <i>Passenger car drivers</i>	Putnici u osobnim automobilima <i>Passengers in passenger cars</i>	Motociklisti <i>Motor cyclists</i>	Mopedisti <i>Moped riders</i>	Biciklisti <i>Bicycle riders</i>	Pješaci <i>Pedestrians</i>	Ostali <i>Others</i>
2008.	22 395	8 614	5 629	2 062	1 519	1 015	2 251	1 305
2009.	21 923	8 748	5 686	1 902	1 305	1 050	2 050	1 182
2010.	18 333	7 252	4 652	1 384	1 015	936	1 905	1 189
2011.	18 065	7 010	4 470	1 479	1 130	1 171	1 834	971
2012.	16 010	6 086	3 847	1 234	1 047	1 133	1 631	1 032
2013.	15 274	5 819	3 715	1 172	876	1 097	1 625	970
2014.	14 222	5 448	3 316	1 120	841	1 185	1 576	736
2015.	15 024	5 650	3 709	1 182	864	1 199	1 563	857
2016.	14 596	5 737	3 616	1 084	781	1 126	1 479	773
2017.	14 608	5 807	3 423	1 222	739	1 068	1 530	819

Table 40. Killed persons in road traffic accidents, by categories [Source: Statistical Yearbook of the Republic of Croatia, Croatian Bureau of Statics, 2018]

	Ukupno <i>Total</i>	Vozači osobnih automobila <i>Passenger car drivers</i>	Putnici u osobnim automobilima <i>Passengers in passenger cars</i>	Motociklisti <i>Motor cyclists</i>	Mopedisti <i>Moped riders</i>	Biciklisti <i>Bicycle riders</i>	Pješaci <i>Pedestrians</i>	Ostali <i>Others</i>
2008.	664	190	113	100	27	47	136	51
2009.	548	171	113	81	15	29	103	36
2010.	426	133	72	51	15	28	105	22
2011.	418	149	66	76	10	28	71	18
2012.	393	136	50	62	16	21	72	36
2013.	368	122	73	49	14	23	69	18
2014.	308	100	41	44	11	19	73	20
2015.	348	108	56	58	14	34	61	17
2016.	307	106	42	38	10	27	67	17
2017.	331	129	58	42	8	23	56	15

1.5.5 ITS applications in national and transnational road networks

Thanks to motorways construction over the last decade, Croatia has induced the implementation of ITS technologies and to date, Intelligent Transport System is well developed on motorway network.

The existing traffic management and road safety equipment of the Republic of Croatian motorways and some high-speed roads puts Croatia on the top in the region as a country with highly developed ITS.

While newer motorways meet environmental protection standards, there are old parts of motorways constructed in 1970es and 1980es which have since then only been maintained and requires the implementation of new environmental protection.⁵

⁵ "Transport Development Strategy of the Republic of Croatia (2017 - 2030), 2nd Draft", Republic of Croatia Ministry of the Sea, Transport and Infrastructure, April 2017. Link: https://mmpi.gov.hr/UserDocImages/dokumenti/INFRASTRUKTURA/Infrastruktura%2010_19/Transport%20Development%20Strategy%20of%20the%20Republic%20of%20Croatia%202017-2030%2029-10_19.pdf

However, on state and local roads, additional resources need to be invested to keep the information systems at a higher level. The technical organization of traffic flow enables operational service of the road, 24/7, to monitor the status of traffic and weather conditions, to control the state of road surface, to control the performance and readiness of installed equipment, to detect and identify possible atypical event and be able to react, in real-time, automatically (and/or) on staff command.

This is particularly relevant, after becoming part of the European Union on 1 July 2013, which has significantly changed the relevance of certain polities in particularly in relation with road safety standards.

So far, National Plan on ITS deployment continue fostering the implementation of new technologies. Specific measures concerning traffic management, monitoring and traffic counting and information system are planned.

1.5.6 Alternative fuel availability usage

In 2017 the Croatian Government adopted the National Policy Framework (NPF) for the deployment of the infrastructure and the development of the market for alternative fuel in transport. ⁶

Given the European environmental and legal framework within the EU, the purpose of the National Policy Framework (NPF) is to establish and develop objectives and measures for the expansion of infrastructure and the growth of the market for alternative fuels in the transportation sector. The NPF encompasses an overview of various alternative fuel types, along with their advantages and limitations, as well as the following components:

- Evaluation of the status and future prospects of the alternative fuels market in the transportation sector.
- Definition of national targets and goals for the deployment of alternative fuels infrastructure. This includes identifying specific locations such as settlements, areas for construction (urban/suburban agglomerations or densely populated regions), and networks that may be equipped with publicly accessible electric and compressed natural gas refuelling points. It also involves assessing the need for liquefied natural gas (LNG) refuelling points in ports outside the Trans-European Transport Network (TEN-T) Core Network and the deployment of electric supply infrastructure at airports for stationary aircraft.
- Implementation of measures required to achieve the national NPF targets and objectives. This may entail actions aimed at promoting the expansion of alternative fuels infrastructure, particularly in public transportation services.

With respect to the targets set by the NPF, in 2020 the state-of-art is the following:

- CNG infrastructures for road vehicles: 3 operating refuelling stations (2020 target: 13).
- LNG infrastructures for road vehicles: 1 operating refuelling stations (2025 target: 2).
- Electricity recharging points: 670 operating recharging points (2020 target: 296).

⁶ NG 34/2017 (8.4.2017), Decision on the adoption of the National Policy Framework for the deployment of the infrastructure and the development of the market for alternative fuels in transport, GOVERNMENT OF THE REPUBLIC OF CROATIA

1.5.7 Key issues

This paragraph presents the most relevant issues highlighted by the analysis carried out on the road network by type of impact.

The impact of the existing problems on the efficiency of the road network has been therefore measured in terms of accessibility, safety/security, service, sustainability, and capacity.

The main problems or key issues identified with respect to the Croatian road network are list in the following table. In the columns it is possible to know the relationships between each theme and the type of impact.

Table 41 Croatia: Identified Key Issues by type of impact.

COUNTRY	KEY ISSUE	ACCESSIBILITY	SAFETY/SECURITY	SERVICE	SUSTAINABILITY	CAPACITY
CROATIA	Lack of capacity of network serving urban areas					
	Road network suffers the seasonal peak of traffic					

1.6 Slovenia

1.6.1 Road network overview

The strategic geographical position makes Slovenia an intensive transport and transit area since the country is historically crossed by two of the major pan-European Corridors: Corridor V and Corridor X.

The Slovene Road network is made up of different typologies of roads. Public roads are divided into State Roads (owned by the Republic of Slovenia) and Municipal Roads (owned by municipalities).

The national road network extends for about 38,900 km. State roads measure in total 6,454 km and divide between Motorways and Expressways.

Municipal roads are roads of the public road network managed by municipalities, which also renovate and maintain them. These roads are divided according to the characterization of municipal roads adopted by municipalities. Municipal roads include local roads (over 13,860 kilometres) and public paths (over 18,500 kilometres).

State roads include the highway network (Avtoceste) that extends for more than 600km of which Motorways, are 544 Km long and Expressways just 73 km long. The highway network links main cities and Slovenia with neighbouring countries. The highway network spread from the centre of Ljubljana. The construction of the motorway and expressway network, in addition to good road and transport connections with neighbouring countries, has significantly improved the connections between regions and accessibility in Slovenia.



Figure 18 The Slovene highway system. [Source: Wikipedia.org]

The following list describes the highways, both motorways and expressways, managed by the state-owned Motorway Company of Slovenia (*Družba za avtoceste v Republiki Sloveniji*, acronym DARS):

- A1 Šentilj (Austrian border) – Koper – 245.3 km.
- A2 Karawanks tunnel (Austrian border) – Obrežje (Croatian border) – 174.5 km.
- A3 Divača – Sežana (Italian border) – 11.3 km;
- A4 Slivnica – Gruškovje (Croatian border) – 33.7 km.
- A5 Dragučova – Pince (Hungarian border) – 79.6 km.
- H3 Zadobrova – Koseze – 10.2 km.
- H4 Razdorto – Vrtojba (Italian border) – 42.1 km.
- H5 Spodnje Škofije – Koper – 7.8 km.
- H6 Koper – Izola – 5.2 km.
- H7 Dolga vas A5 connection – Dolga vas settlement (Hungarian border) – 3.5 km.

A vignette-based toll system was established in 2008, so drivers are required to buy the pertinent pass (the price is subject to the typology of vehicle).

1.6.2 Road traffic volumes (passengers and freight)

The Transport Development Strategy of the Republic of Slovenia with time horizon 2030 is the most detailed document providing figures and elaboration on the transport demand. However, some of the figure ad dated back to 2011. The following paragraphs present a summary of the information provided in the strategic document.

As shown below, transport by private vehicle has constantly raised from 1999 to 2011 with an increase of 32% at all. Average growth rate was about 3% per year. Due to the crisis, growth has been stagnating since 2008, and a decline in the volume of traffic has been detected in some areas.

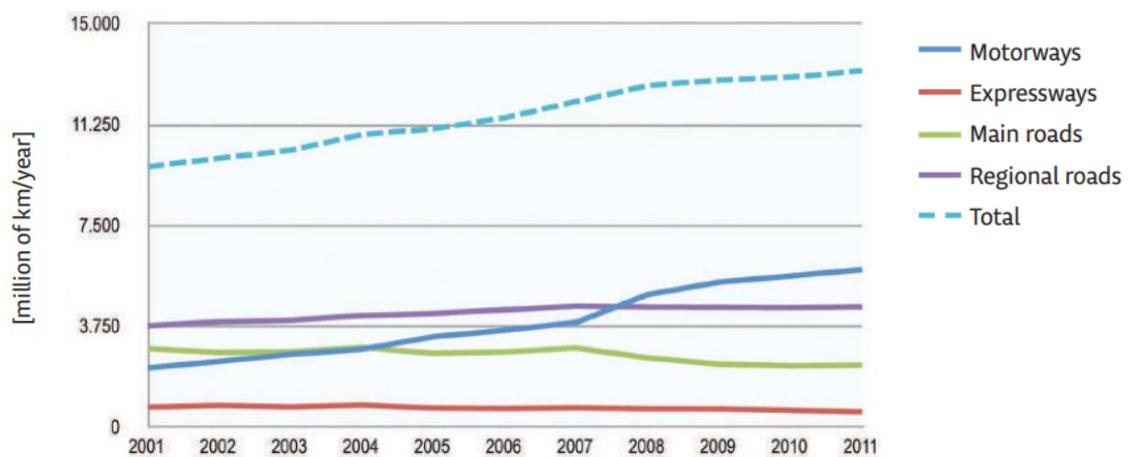


Figure 19 Increase in transport by types of road in the period from 2001 to 2011.

[Source: Transport Development Strategy of the Republic of Slovenia Until 2030, Ministry of Infrastructure, Republic of Slovenia 2017, Data from: Slovenian Infrastructure Agency]

Public bus passenger transport (which does not include urban public passenger transport) decreased by 38% from 2002 to 2011 and the number of passengers travelling by urban public passenger transport decreased by 13.4% in the same period.

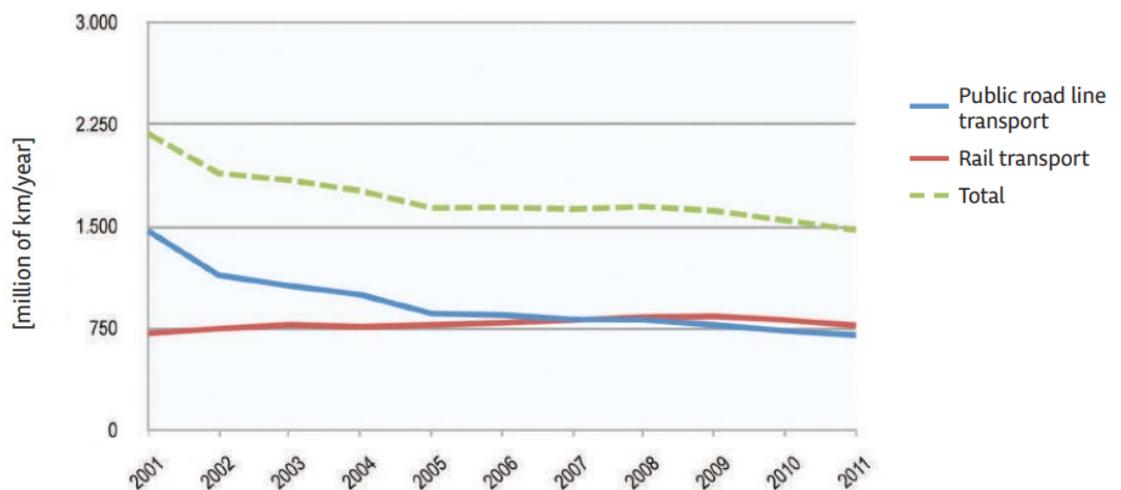


Figure 20 Increase in public transport by type of transport from 2001 to 2011.

[Source: Transport Development Strategy of the Republic of Slovenia Until 2030, Ministry of Infrastructure, Republic of Slovenia 2017, Data from: Statistical Office of the Republic of Slovenia.]

Road and rail goods transport are increasing. However, road goods transport is increasing significantly faster than rail good transport. Goods transport increased until 2008, decreased between 2008 and 2009 and has been rising again since 2009. Some 149% more cargo was transported by road in 2011 than in 2002.

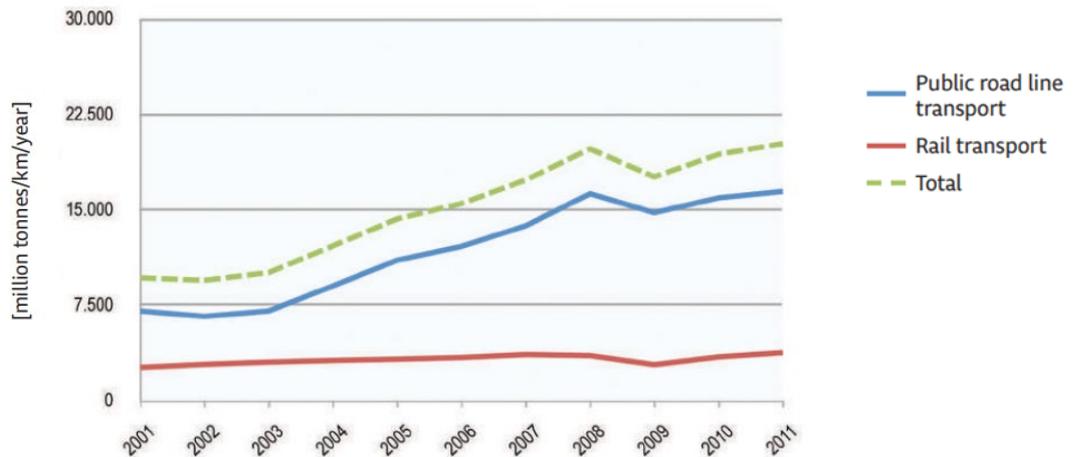


Figure 21 Increase in freight transport by type of transport from 2001 to 2011.

[Source: Transport Development Strategy of the Republic of Slovenia Until 2030, Ministry of Infrastructure, Republic of Slovenia 2017, Data from: Statistical Office of the Republic of Slovenia.]

Goods transported by road increased in this period at an average annual rate of more than 11%. Rail transport increased by 32% over this period or an average of 3.1% per year.

Most transport takes place on the Slovenian motorway and across the area of Ljubljana with its motorway ring and connection sections stands out, along with the Maribor area. The South-West and North-East direction carry the greatest burden on the motorway cross, similarly to rail transport. Transport flows in Ljubljana's surrounding area is largely affected by the strategic position of the city along in the Mediterranean Corridor.

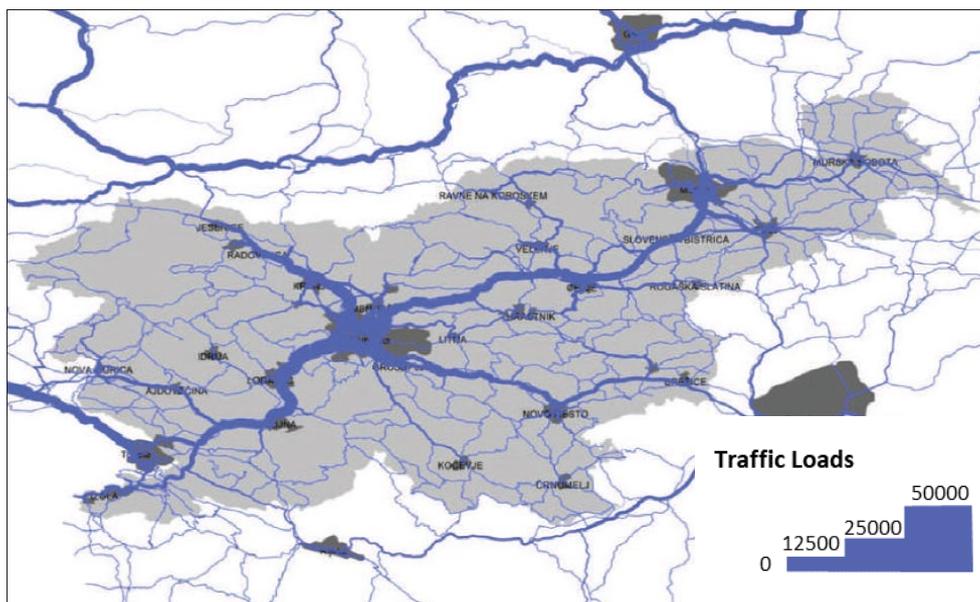


Figure 22 Road transport load (vehicles/working day) year 2011 [Source: Transport Development Strategy of the Republic of Slovenia Until 2030, Ministry of Infrastructure, Republic of Slovenia 2017]

More recent figures demonstrate how the situation in 2019 remained quite close to 2011 figure in term of road traffic and preferred axes on the national network. High values of traffic (red lines) correspond to the main traffic axes (Koper and Littoral – Ljubljana - Maribor and the north-eastern regions and Jesenice – Ljubljana – Croatian border).

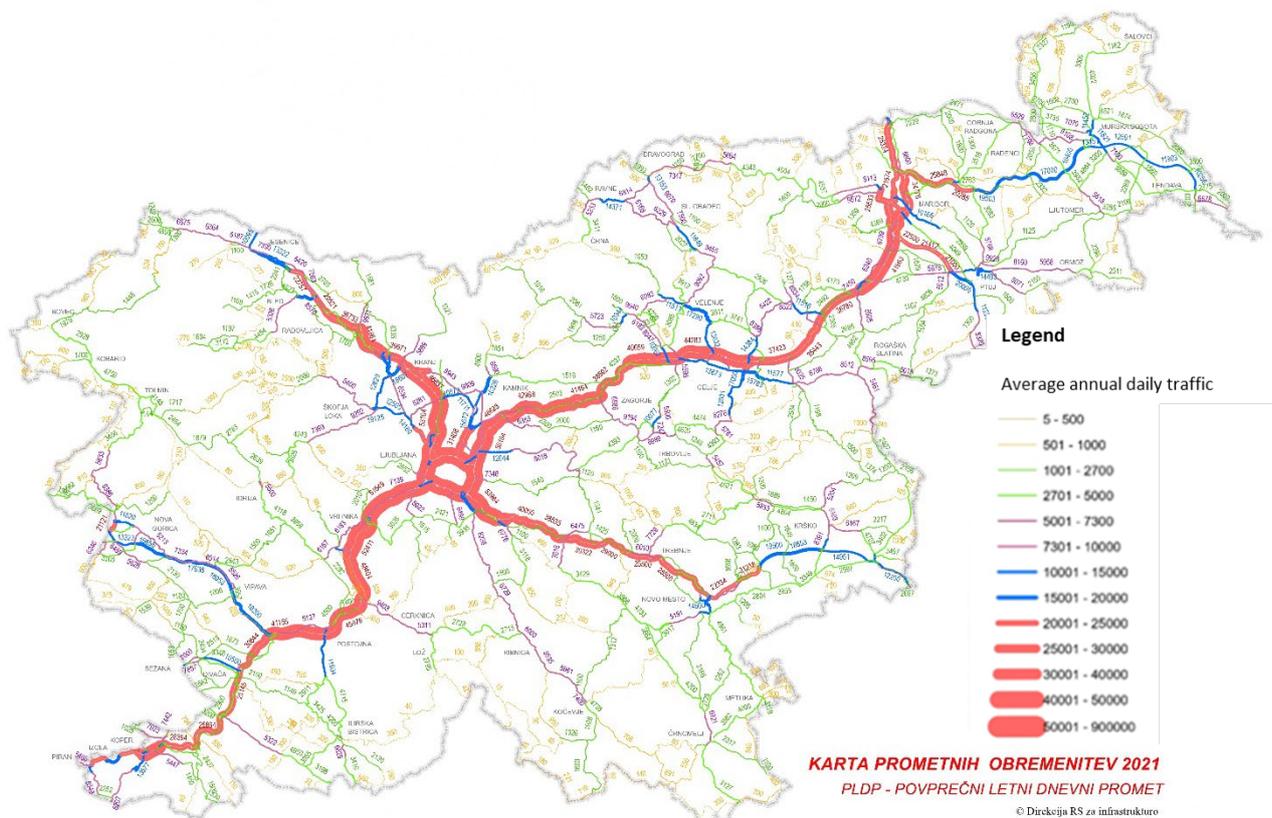


Figure 23 Traffic flows on Slovene road system (Average annual daily traffic)[Source: Direkcija RS za infrastrukturo, 2019]

The figure below shows the situation in 2011 of existing rail and bus public transport. Buses show to carry approximately the same number of passengers as train, but bus passenger are distributed through the network while rail passenger are mainly concentrated in few corridors, especially on the ZIDANI Most-Ljubljana.

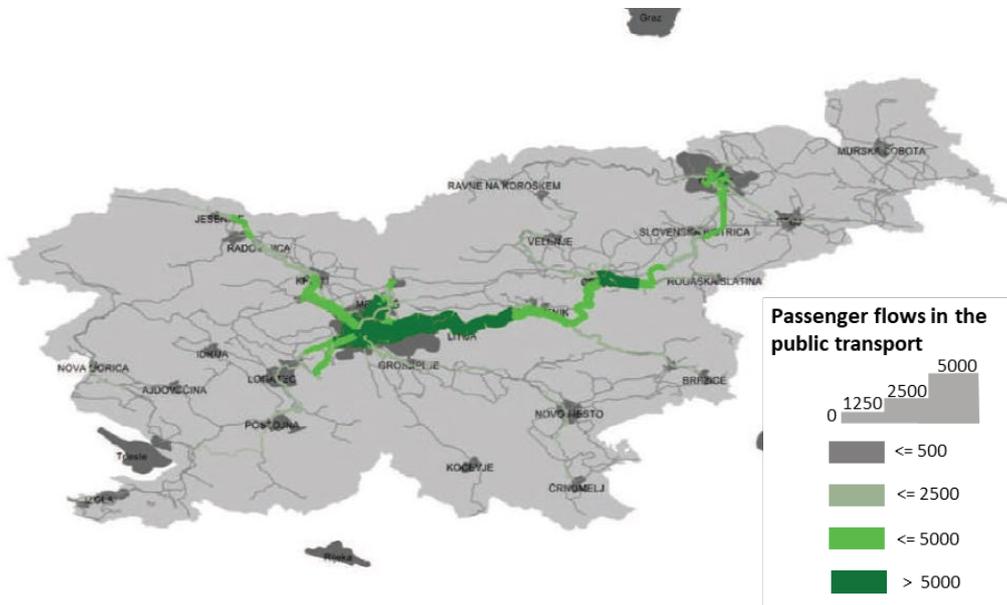


Figure 24 Public passenger transport load (passenger/working day) year 2011 [Source: Transport Development Strategy of the Republic of Slovenia Until 2030, Ministry of Infrastructure, Republic of Slovenia 2017]

The Transport Plan also provides some demand estimation on the transport flow to 2030 and shows how modal share would change if not improvements on the network and services will be performed. The following figure shows how changes in the number of trips by mode will not change as much compared to 2011 and private car will increase their share, while public transport, walking and bicycle trip will be reduced and remain marginal.

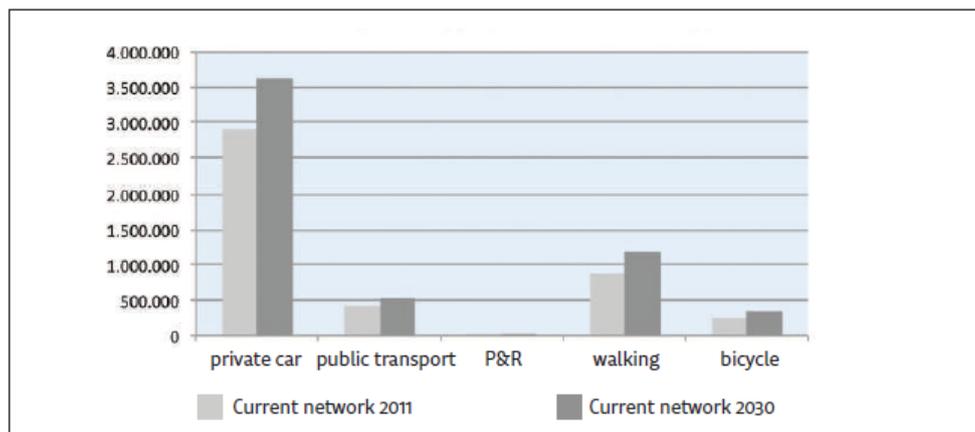


Figure 25 Number of trips in Slovenia 2011-2030 [Source: Transport Development Strategy of the Republic of Slovenia Until 2030, Ministry of Infrastructure, Republic of Slovenia 2017]

Volumes of good transported by road increased as well in the last year as shown in the table below.

Table 42. Goods transport and traffic, Slovenia, annually [Source: stat.si]

		2015	2016	2017	2018	2019
Tonne (1000)	Road transport	70,513	75,052	86,212	85,406	91,775
Tonne-kilometres (mio.)	Road transport	17,911.5	18,714.0	20,814.0	22,225.0	24,012.0
Indices tonne (2010=100)	Road transport	87.0	92.6	106.4	105.4	113.3
Indices tkm (2010=100)	Road transport	112.4	117.5	130.7	139.5	150.7

The high share of private transport is also demonstrated by the high motorization rate in Slovenia. According to the Slovene Statistical Office, more than 500 passenger cars per 1,000 inhabitants were registered in Slovenia leading the motorization rate in Slovenia in the top-10 of EU countries.

Table 43. Passenger cars and first registrations of new passenger cars, Slovenia, annually [Source: stat.si]

	2015	2016	2017	2018	2019
Number of passenger cars on 31 December	1,078,737	1,096,523	1,117,935	1,143,150	1,165,371
Number of first registrations of new passenger cars	60,668	64,899	72,477	74,518	72,710

The number of vehicle kilometres of vehicles registered in Slovenia and abroad by type of vehicle and type of road on national road territory has been constantly increasing until the COVID-19 outbreak (see Table 44). Despite the limitations, during the 2020 a considerable amount of traffic was registered, so the delta between 2019 and 2020 is narrow.

Table 44. Number of vehicle kilometres of vehicles registered in Slovenia and abroad by type of vehicle and type of road on national road territory (in million v*km) [Source: stat.si]

			2016	2017	2018	2019	2020
Type of vehicle – TOTAL	Registered vehicles – TOTAL	Public roads – TOTAL	20,605	21,346	21,886	22,477	20,242
		Motorways and highways	7,147	7,464	7,752	8,008	5,966
		Other roads	13,458	13,882	14,133	14,468	14,276
	National vehicles	Public roads – TOTAL	17,811	18,457	18,906	19,412	18,760
		Motorways and highways	4,646	4,851	5,031	5,192	4,656
		Other roads	13,166	13,606	13,875	14,220	14,103
	Foreign vehicles	Public roads – TOTAL	2,793	2,889	2,980	3,065	1,483
		Motorways and highways	2,501	2,612	2,721	2,817	1,310
		Other roads	292	277	258	248	173

Indexes shown at Table 42 represent the increasing trends of freight road transport in Slovenia. These numbers reflect the pivotal role played by the country in the European road network.

1.6.3 Border checkpoints infrastructural and operative characteristics

Thanks to its geographical position, Slovenia is a keystone country in the EU road network. Slovenia, EU and Schengen area member, shares its borders with Austria, Hungary, Croatia and Italy. Slovenian main road network is connected to all the neighbouring countries by the following borders.

Border with Austria:

- border crossing at Karawanks Motorway A2 (the state border is in the middle of the tunnel), which continues in Austria as Motorway A11 towards Villach and border crossing at Šentilj (Motorway A1, which continues in Austria as Motorway A11 towards Graz).

Border with Hungary:

- border crossing at Dolga vas (Expressway H7, which continues in Hungary as road 86)
- border crossing at Pince (Motorway A5, which continues in Hungary as Motorway M70).

Border with Croatia (external Schengen border):

- border crossing at Gruškovje (Motorway A4, which continues in Croatia as Motorway A2 towards Zagreb),
- border crossing at Obrežje (Motorway A2, which continues in Croatia as Motorway A3 towards Zagreb),
- border crossings at Jelšane and Starod (national roads 6 and 7 respectively, which continue in Croatia towards Rijeka and Dalmatia)
- border crossings at Sečovelje and Dragonja (national roads 111 and 11 respectively, which continue in Croatia as Motorway A9 towards Kanfanar and Pula).

The Jelšane, Starod, Sečovelje and Dragonja checkpoints are very busy in summer due to the huge flows from Italy and northern Europe towards the Croatian coast (Dalmatia and Istria).

Border with Italy:

- border crossing at Rabujez (Expressway H5, which continues in Italy towards Trieste),
- border crossing at Pesek (national road 7, which continues as national road 14 in Italy towards Trieste),
- border crossing at Ferneti (Motorway A3, which continues as Motorway RA14 in Italy towards Trieste),
- border crossing at Vrtojba (Expressway H4, which continues in Italy as Motorway A34 towards Villése) and
- border crossing at Fusine/Rateče (national road 202, which continues in Italy as national road 54 towards Tarvisio).

The Rabujez and Pesek, checkpoints are very busy in summer due to the huge flows from Italy and northern Europe towards the Croatian coast (Dalmatia and Istria). The Ferneti and Vrtojba checkpoints are very important for freight transport because they are linked to two international intermodal terminals (Ferneti and Gorizia respectively).

Overall, the lack of adequate infrastructure in the southern end of Slovenia (corresponding to the Primorska/Littoral statistical region) penalizes the traffic. The biggest problems are the congestions on state

borders during the tourist season (roads to Croatia, Austria), the throughput of the Koper-Ljubljana corridor for goods transport (in particular the existing railway lines) and the connections to tourist centres and the Croatian border.

In addition to these border crossings at main road network, several local checkpoints allow to cross the borders. The Istrian area, subdivided into three different countries (Italy, Slovenia and Croatia) is characterized by daily international commuting.

1.6.4 Road safety in national and transnational networks

Traffic safety in Slovenia has been gradually improving. A significant improvement was seen with the introduction of related measures in various fields, from the construction of the motorway network and the introduction of vignettes, amendments to legislation on rules which treat offences of non-compliance with speed limits and driving under the influence of alcohol, drugs and psychoactive substances considerably more severely, and measures at the level of municipalities, to the influence of media and non-governmental organizations. However, according to the number of road accidents per capita, Slovenia still ranks among those EU Member States with an above-average number of accidents.

The causes of road accidents vary (road users, road infrastructure, vehicles, etc.). The share of accidents resulting from an unsuitable road arrangement, and the state of road infrastructure and its maintenance has not been unambiguously established. Undoubtedly, however, unsuitable road arrangements, and road and railway crossings contribute to poorer traffic safety.

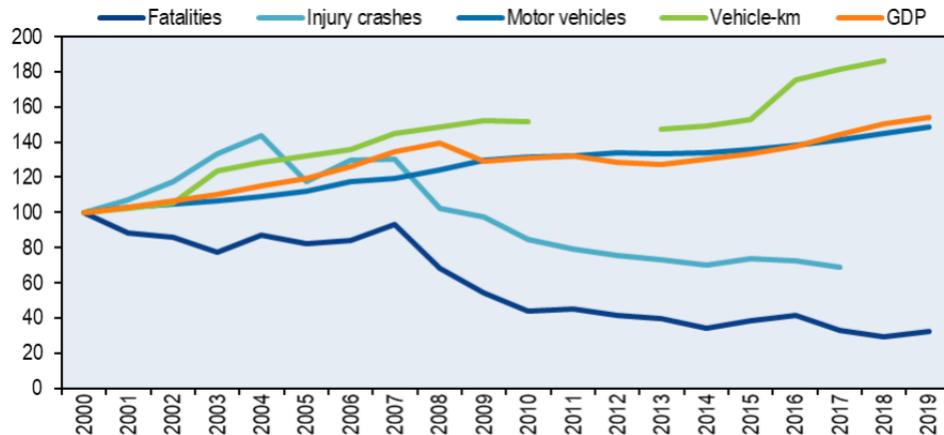
Slovenia registered an overall increase in the number of road deaths in 2019. According to latest data, 102 persons lost their lives in traffic crashes in Slovenia in 2019. This represents a 12.1% increase on 2018. In 2018, 91 road deaths were reported, a 12.5% decline on the 104 lives lost in 2017. This was the lowest level of mortality on record.

The number of traffic deaths per 100 000 inhabitants in Slovenia has decreased by 69% between 2000 and 2019. In 2019, 4.9 traffic deaths per 100 000 inhabitants were recorded, compared to 15.8 in 2000. By way of comparison, the average in the European Union is 5.1 deaths per 100 000 inhabitants in 2019.

The longer-term trend for road deaths in Slovenia has shown significant road safety improvements. Between 2000 and 2019, the number of annual road fatalities fell by 68%.

Table 45 Traffic accidents: all accidents [Source: Slovenian Traffic Safety Agency]

<i>Leto</i>	Januar	Februar	Marec	April	Maj	Junij	Julij	Avgust	September	Oktober	November	December	<i>Skupaj</i>
2014	1363	1174	1343	1512	1591	1657	1563	1564	1729	1613	1509	1634	18252
2015	1306	1176	1321	1429	1547	1761	1518	1578	1597	1645	1463	1583	17924
2016	1322	1136	1432	1467	1578	1661	1530	1577	1631	1670	1359	1568	17931
2017	1309	1077	1327	1265	1571	1658	1582	1609	1624	1553	1400	1609	17584
2018	1297	1387	1392	1442	1556	1692	1559	1659	1613	1671	1402	1578	18248
2019	1338	1236	1423	1479	1596	1858	1668	1553	1708	1864	1576	1562	18861
2020	1482	1285	990	632	1206	1374	1649	1551	1576	1158			12903



Note: Registered vehicles do not include mopeds.

Figure 26 Road safety, vehicle stock and GDP trends (index 2000=100) [Source: Road Safety Annual Report, OECD, 2019]

1.6.5 ITS applications in national and transnational road networks

Slovenian Ministry of Infrastructure exercises through the Land Transport Directorate the management of road transport and logistics, as well as railways and cableways. Among his tasks, this State body is responsible for analyse and monitor traffic flow data and improve road safety. To achieve this goal, it deals with developing and promoting Intelligent Transport System, designed primarily to inform road users, to implement safety.

The Slovenian Government adopted (2015)⁷ a resolution on the transport development strategy, which looks to define comprehensive development of transport and transport infrastructure until 2030, secure stable financing and meet preliminary conditions for the phasing of EU funds in the 2014-2020 period.

The document analyses the geo-strategic position of Slovenia, the importance of transport for the country and its economy, current and future traffic flows, the situation of all transport sectors, and defines a transport model and general transport policy measures on its basis.

In addition to transport infrastructure, the document also deals with management and maintenance of the transport system and covers public passenger transport, intelligent transport systems, logistics and infrastructure for alternative energy sources.

Measures foreseen concern:

- the use of ITS to manage parking areas for lorries along the Motorways providing information on occupancy and vacancy places.
- traffic control technologies to monitor speed to improve safety condition on roads and reduce the number of accidents.
- Route vehicle for the transport of goods along preferred roads to avoid congestion and guarantee higher standards along the path.

⁷ <https://www.railwaypro.com/wp/sovenia-2030-transport-strategy-adopted>

1.6.6 Alternative fuel availability usage

According to the Slovene Statistical Office, a large majority of cars registered in Slovenia run either on petrol (50%) or on diesel (48.6%). The share of cars running on other fuels is very low, but it is growing. For example, 4,606 cars registered in 2018 were using hybrid drive, which is four times more than in 2014. In addition, 1,308 electric cars were registered, which is ten times more than in 2014.

In 2017 the Slovenian Government adopted the 'Strategy for market development for the deployment of an alternative fuels infrastructure in the transport sector of the Republic of Slovenia'. The Strategy examines alternative fuels for the use of alternative fuels in transport. Through some measures, the Transport strategy as well as the National Programme require the Ministry of Infrastructure to prepare development plans concerning alternative fuels. After 2025, Slovenia will restrict the first registration of passenger vehicles and light commercial vehicles of categories M1, MG1 and N1 whose CO₂ share is, according to the manufacturer declaration, higher than 100 g/km, and after 2030 this threshold will be reduced to 50 g/km or more. In line with the objective, by 2025 the focus will shift to electrically powered and hybrid vehicles, and those fossil fuel vehicles that meet high standards and have a significantly lower negative impact on the environment than the vehicles currently in use. The Strategy has the objective that Slovenia introduces at least 200,000 electric vehicles by 2030 as well as a suitable number of other vehicles powered by alternative fuels in order to meet its environmental targets:

- Electric: The optimal scenario of the proposal of the Strategy forecasts an increase in the share of personal vehicles powered by alternative fuel or alternative power on the total Slovenian car fleet of 20% by 2030.
- Hydrogen: Hydrogen as an alternative source of energy is seen as playing a role of energy carrier for producing electric power in fuel cells for vehicle propulsion. In 2030 the forecast is a fleet of 33,000 in 2030 with have of this newly registered in the period 2026-2030 and a market share of 2.8% in 2030.
- CNG: For cars, the forecast is a fleet of 7,400 in 2030 and a market share of 1% in 2030. With regard to buses, compressed natural gas is the key alternative fuel in realizing the objectives. For 2030, market share is forecasted to be 62% for CNG buses with 17% for electric and 4% for hydrogen.
- LNG: For international transport, LNG has been recognized as the most recognizable solution, as the share of LNG heavy-duty vehicles is planned to increase. For 2030 market share of 13% is forecasted. As part of the international project POSEIDON II-MED, the paper 'Possibilities for the supply and use of liquefied natural gas as an alternative fuel for the Port of Koper' was prepared. Only in the Port of Koper, which is a part of the Adriatic TNT-T network, refuelling ships with LNG will have to be available in 2025 in a manner that will be justified in terms of safety, environment and economic efficiency.

With respect to the targets set by the NPF, in 2020 the state-of-art is the following:

- CNG infrastructures for road vehicles: 5 operating refuelling stations (2020 target: 14).
- LNG infrastructures for road vehicles: 1 operating refuelling stations (2025 target: 3).
- Electricity recharging points: 610 operating recharging points (2020 target: 1200).
- H₂ refuelling stations: 0 refuelling stations (2025 target: 7).

1.6.7 Key issues

This paragraph presents the most relevant issues highlighted by the analysis carried out on the road network by type of impact.

The impact of the existing problems on the efficiency of the road network has been therefore measured in terms of accessibility, safety/security, service, sustainability, and capacity.

The main problems or key issues identified with respect to the Slovenian road network are list in the following table. In the columns it is possible to know the relationships between each theme and the type of impact.

Table 46 Slovenia: Identified Key Issues by type of impact.

COUNTRY	KEY ISSUE	ACCESSIBILITY	SAFETY/SECURITY	SERVICE	SUSTAINABILITY	CAPACITY
SLOVENIA	Very limited extension of the Motorway network and Expressways					
	Ljubljana's surrounding road network is often under congestion due to seasonal peak and the concentric characteristics of the network					
	Public road transport passenger (non-urban) has reduced					
	Lack of capacity in sections candidate to become part of the TEN-T extension					
	High motorization rate (top-10 EU countries)					
	Congestions at borders (IT) due to seasonal peak causes delays and reduces the performance of the network					

1.7 Greece

1.7.1 Road network overview

Greek road network extends for over 117,000 km with a road density of 89 km/100 km². Most of the road network is made by paved roads (108,000 km) and includes different types of roads. The backbone of the network is made up of the Motorway (Αυτοκινητόδρομοι) and the National Road (Εθνικές Οδοί) systems.

Motorways typically consist of six or four lanes (three or two lanes in each direction) plus an emergency lane, in separate carriage and entrances/exits are controlled with a tolled system, operated by eight different companies.

National Roads usually have a single carriageway with one or two traffic lanes for each direction, usually with an emergency lane on each side as well.



Figure 27 Motorway network in Greece as of 2022. [Source: Wikipedia.org. Author: Theodooritus]

The morphology of the territory with most of it mountainous, has led the construction of the Greek motorway network very challenging especially for some sections in the mainland area.

Motorway network in Greece is the most extensive one in South-eastern Europe with a total length of about 2.320 km as of 2020. The following list describes the Greek operating Motorways⁸ or Operating Motorway Sections⁹ :

- **A1:** Athens (SEF I/C) – Thessaloniki - Evzonoι (North Macedonia border)
 - Section: Athens (SEF I/C) – Kleidi 472 km
 - Section: Kleidi – Axios 14 km (common section with Motorway A2)
 - Section: Polykastro – Evzonoι 16 km

Total Operating Sections Length: 502 km

⁸ Constructed and specified as Motorways according to the Greek Legislation (Law 2696/1999 and amendments and Ministerial Decision: DOY/oik/5776/4-12-2015 - FEK AAP/253/21-12-2015).

⁹ [The Motorway Number and its full description are given first, followed by specification of the completed sections, in case the motorway is not fully completed]

- **A11** Schimatari (Connection with A1) - Chalkis (Vatontas I/C)
 - Section: Schimatari (Connection with A1) – Chalkis (Start of Bridge) 11 km.

Total Operating Sections Length: 11 km
- **A2** (Egnatia Odos): Igoumenitsa – Kipoi (Turkish border) – 657.8km (common section with motorway A1 Kleidi – Axios included)
- **A24** Thessaloniki - Nea Moudania
 - Section: K12 I/C – Nea Moudania 53 km.

Total Operating Sections Length: 53 km
- **A242** Raideostos – International Airport Macedonia - 1.5 km
- **A25** Thessaloniki – Serres – Promahonas (Bulgarian border) - 95.5 km
- **A27** Kozani - Ptolemaida – Niki (North Macedonia border)
 - Section: Kozani – Ptolemaida 22 km
 - Section: Florina – Niki 14 km

Total Operating Sections Length: 36 km
- **A29** Siatista – Krystallopigi (Albanian border) – 69.2 km
- **A3** (Central Greece Motorway): Lamia – Trikala – Egnatia Odos (A2) I/C
 - Section: Lamia (Anthili / Connection with A1) – Karpenisi I/C 15 km
 - Section: Xiniada – Trikala 80 km

Total Operating Sections Length: 95 km
- **A5** (Ionia Odos): Tsakona (Connection with Central Peloponnese Motorway A7) – Kakavia (Albania border)
 - Section: Patra (Mintilogli) – Ioannina 220 km (Patra ByPass and Rio-Antirrio Bridge included)
- **A6** (Attiki Odos): Elefsina - Athens – Stavros – Markopoulo – Lavrio
 - Section: Elefsina - Markopoulo 48 km

Total Operating Sections Length: 48 km
- **A62** Ymittos – Rafina
 - Section: Kaisariani (Alimou – katehaki Str) – Ag. Paraskevi – Spata - Pallini ¹⁰: 13.5 km

Total Operating Sections Length: 13.5 km
- **A621**: Western Connection A62 with A6 (Agia Paraskevi I/C– Doukissis Plakentias I/C), 2.3 km¹¹
- **A64** Koropi - Athens International Airport – 6 km¹²
- **A7** (Central Peloponnese Motorway): Corinth – Kalamata 159 km
- **A71** Lefktro – Sparti 45.5 km
- **A8** Athens (Elefsina-Connection with A6) – Patra (Rio I/C-Connection with A5) 180 km

¹⁰ [Not illustrated in Figure 27]

¹¹ [Not illustrated in Figure 27]

¹² [Not illustrated in Figure 27]

- **A90:** North Crete Road Axis: Kasteli – Chania – Rethimnon – Herakleion – Agios Nikolaos – Siteia
 - Section: Gournes – Hersonisos 9 km
 Total Operating Sections Length: 9 km

Two new Sections of total length of 28 km, have been constructed, regarding the TEN-T 52 Road Network “Aktio – Amvrakia”¹³:

- Section: Aktio – Vonitsa – 10 km
- Section: Loutraki – Amvrakia – 18 km.

The above sections have been constructed with the technical and operational attributes of a motorway but the relevant Ministerial Decision that should define the whole axis as motorway A52 is pending (under process).

1.7.2 Road traffic volumes (passengers and freight)

Despite the economic crisis in the last years, the total number of Greek vehicles in circulation have been increasing. According to the National Institute of Statistics, the total number is constantly over 8 million vehicles and more than 5,4 million are passenger vehicles.

Table 47 Land transport, 2017 – 2020 [Source: statistics.gr]

	2017	2018	2019	2020
Vehicles in circulation	8,262,896	8,236,637	8,402,294	8,530,050
Passenger vehicles	5,235,928	5,282,695	5,406,551	5,492,176
Buses	26,481	26,389	26,479	26,539
Trucks	1,343,830	1,344,062	1,359,341	1,373,727
Motorcycles	1,656,657	1,583,491	1,609,923	1,637,608

The Hellenic Statistical Authority announces the results of the road freight transport survey for the year 2020. According to the survey results, in 2020 compared to 2019, a decrease is observed in the total weight of goods which were carried by road freight vehicles registered in Greece.

Specifically, in 2020, the weight of goods carried by road transport vehicles, for own account, amounted to 201,184.1 thousand tonnes thus recording an 22.4% decrease in comparison with 2019.

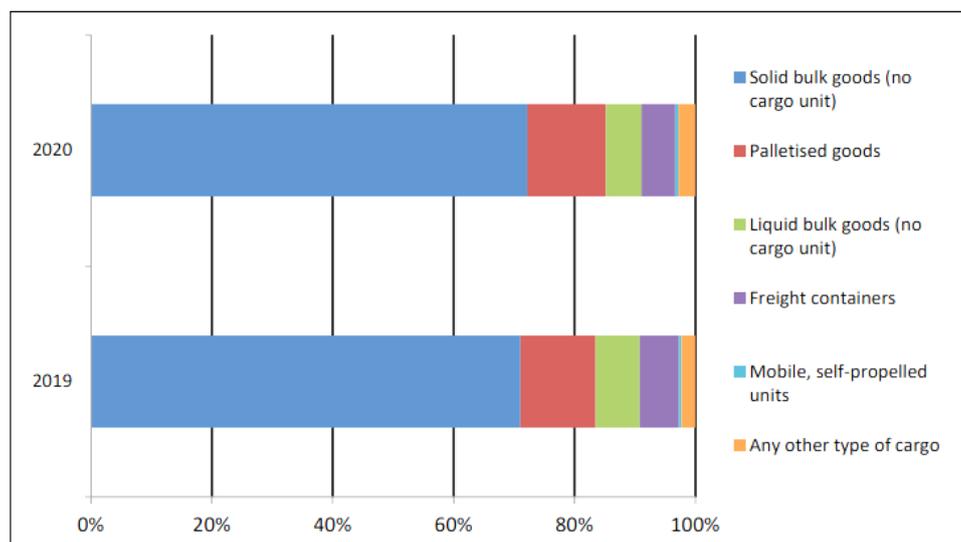
The tonne-kilometres effected by road transport vehicles, for own account, during 2020 amounted to 5,507,114.5 thousand, recording a decrease by 11.3% in comparison with 2019.

¹³ [Axis illustrated in Figure 27]

Table 48 Weight of transported good in tonne-km by road freight vehicles registered in Greece [Source: statistics.gr]

Type of cargo	Weight of transported goods (k-tonnes)			Tonne-Kilometers (k-tkm)		
	2019	2020	Change %	2019	2020	Change %
Total of transports	354,081.5	289,354.5	-18.3	28,196,955.2	25,386,537.4	-10.0
Solid bulk goods (no cargo unit)	251,559.4	208,933.4	-16.9	9,264,052.7	8,964,406.7	-3.2
Palletised goods	44,034.2	37,687.1	-14.4	13,446,368.4	12,951,023.2	-3.7
Liquid bulk goods (no cargo unit)	25,887.6	16,981.0	-34.4	2,583,816.3	1,524,592.8	-41.0
Freight containers	22,877.8	16,132.6	-29.5	775,874.6	468,194.1	-39.7
Mobile, self-propelled units	1,613.9	1,524.9	-5.5	213,930.5	146,315.8	-31.6
Any other type of cargo	8,108.7	8,095.5	-0.2	1,912,912.7	1,332,004.8	-30.4

Figure 28 Percentage distribution of the weight of transported goods by type of cargo [Source: statistics.gr]



1.7.3 Border checkpoints infrastructural and operative characteristics

According to National Transport Plan for Greece, Greece shares a significant land border with Albania, North Macedonia, and Bulgaria, and with Turkey where border checkpoints are in Kastanies and Kipoi.

Except for Bulgaria, all countries bordering with Greece are non-EU countries with non-Schengen borders, and this presents significant challenges in relation to cross border trade. Nevertheless, the integration of commercial and social fabric across these borders is also hampered by very weak infrastructure, as well as difficult border crossing procedures.

Greece trades around 4,500 million tons of freight with EU neighbours on an annual basis, and a further 1,800 million tons with the Western Balkans. Despite this, routes by road remain weak, with areas of poor

infrastructure and with long and unreliable border crossing times. It is necessary to improve this connectivity so as to improve the range of trade routes to, from and through Greece, and to create synergies with neighbouring freight nodes on the European network.

There is a necessity for the completion of the missing links on the main Vertical Axes of the Egnatia Motorway (A2) that are parts of the TEN -T network (comprehensive) and lead to the Borders with the neighboring countries (Albania, North Macedonia, Bulgaria).

1.7.4 Road safety in national and transnational networks

The regulatory framework covering Road Safety objectives regarding the motorways as well as the whole TEN-T Network, derives mainly from Directive 2019/1936/EU (amendment of Directive 2008/96/EU), adopted by the national legislation as per PD 66/2022 (amendment of PD 104/2011).

According to Road Safety Observatory of National Technical University of Athens, accidents in Greek road network have been decreasing between 2010-2019.

In 2019, in Greece a total of 10,712 road accidents resulting to death or injury occurred, recording a decrease of 0.2% in comparison with 2018, when the corresponding number of road accidents amounted to 10,737.

Table 49 Number of road traffic accidents and casualties, year 2018-2019. [Source: statistics.gr, 2019]

	2018	2019	Annual change 2019/2018 (%)
Accidents	10,737	10,712	-0.2
Thereof fatal	645	656	1.7
% of fatal accidents	6.0	6.1	
Total of casualties	13,849	13,690	-1.1
Fatalities	700	688	-1.7
Total of injuries	13,149	13,002	-1.1
Serious injuries	727	652	-10.3
Slight injuries	12,422	12,350	-0.6

Greece registered an overall decrease in the number of road deaths in 2019. According to the latest preliminary data, 688 persons lost their lives in traffic crashes in Greece in 2019. This represents a 1.7% decline in 2018 and the lowest figure on record. In 2018, 700 road deaths were reported, a 4.2% decline in 2017. Out of the total number of 688 persons killed, 201, (29.2%) were on passenger cars, 251, (36.5%) on two-wheel vehicles (including mopeds) and 145, (21.1%) were pedestrian.

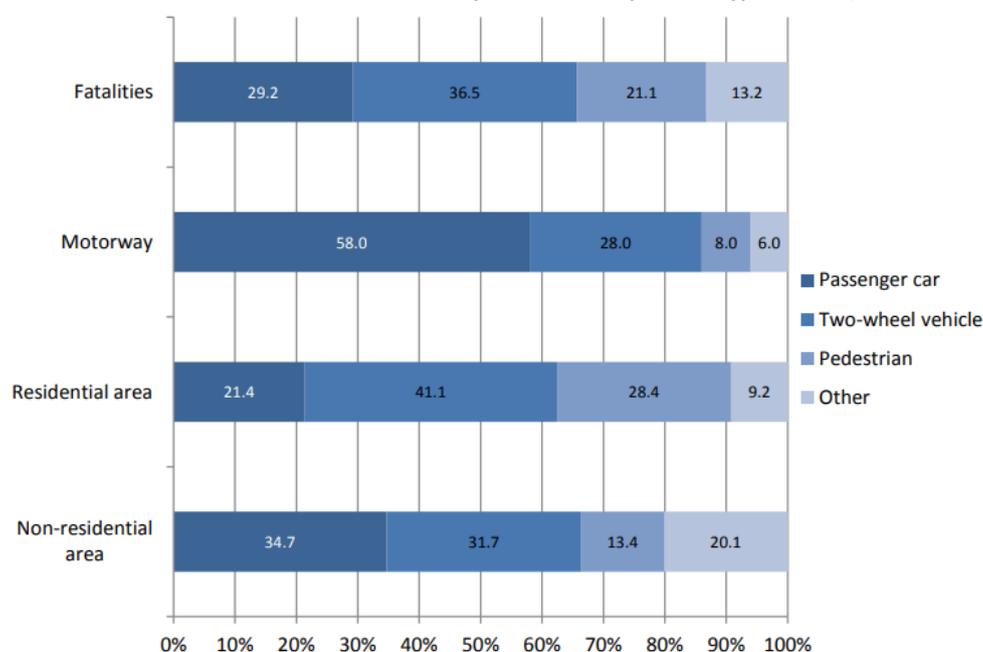
As regards the distribution of fatalities by type of area where the accident occurred, it is observed that in residential areas, 21.4% of persons killed were on passenger cars and 41.1% on two-wheel vehicles.

The corresponding shares in non-residential areas are 34.7% and 31.7%, respectively. In motorways, 58.0% of persons killed were on passenger cars and 28.0% on two-wheel vehicles (Table 50).

Table 50 Road accident fatalities by mode of transport and type of area, year 2019 [Source: statistics.gr, 2019]

Mode of transport	Number of fatalities	%	Motorway	%	Residential area	%	Non-residential area	%
Grand total	688	100.0	50	100.0	370	100.0	268	100.0
% of fatalities by type of area	100.0		7.3		53.8		39.0	
Passenger car	201	29.2	29	58.0	79	21.4	93	34.7
Two-wheel vehicle	251	36.5	14	28.0	152	41.1	85	31.7
Pedestrian	145	21.1	4	8.0	105	28.4	36	13.4
Other type of vehicle	91	13.2	3	6.0	34	9.2	54	20.1

Figure 29 Distribution of the road accident fatalities by mode of transport and type of area [Source: OECD, 2019]



According to Hellenic Statistical Authority¹⁴, analyses on month distribution of the road accidents and fatalities over the period of 2019, show a relevant disparity between the summer and winter periods. In January was recorded the smallest number of road accidents (676 or 6.3% of the total number of accidents in 2019) against the biggest number (1,073 or 10%) recorded in July. Similarly, the smallest number of fatalities (39 or 5.7%) was recorded in February and March and the biggest number of fatalities (80 or 11.6%) was observed in August.

¹⁴ <https://www.statistics.gr>

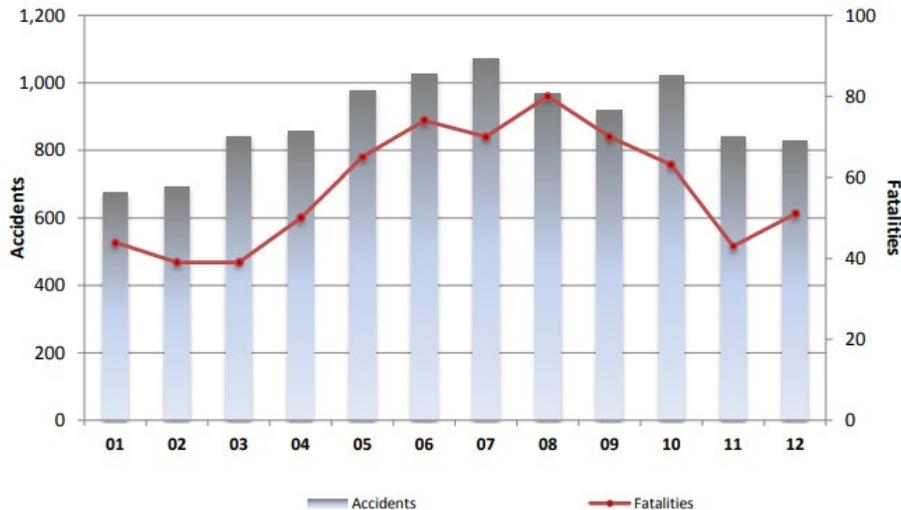


Figure 30 Distribution of road accidents and fatalities by month [Source: statistics.gr, 2019]

Looking at the longer-term trend since 2000, the number of road deaths in Greece has significantly decreased, particularly during the second decade of the century: between 2010 and 2019 annual road fatalities fell by 66% and the number of road deaths per million inhabitants sharply decreased from 112 in 2010 to 54 in 2020. It's worth mentioning that, Greece was the only EU country that achieved the decade 2010-2020 target of 50% road fatalities reduction, with a performance of -54% (from 1.258 road fatalities in 2010 to 579 expenditures, a result, in June 2021, in recognition of outstanding efforts to *improve road safety* during the last decade, Greece through the Ministry of Infrastructure and Transport, was awarded with the 2021 Annual Road Safety Award of the European Transport Safety Council.

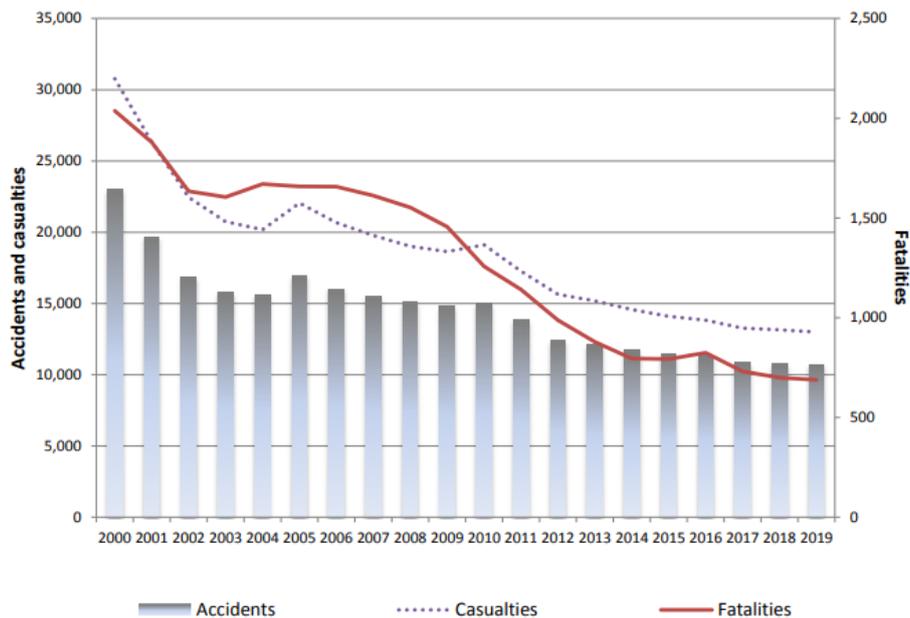


Figure 31 Number of road accidents and casualties [Source: statistics.gr, 2019]

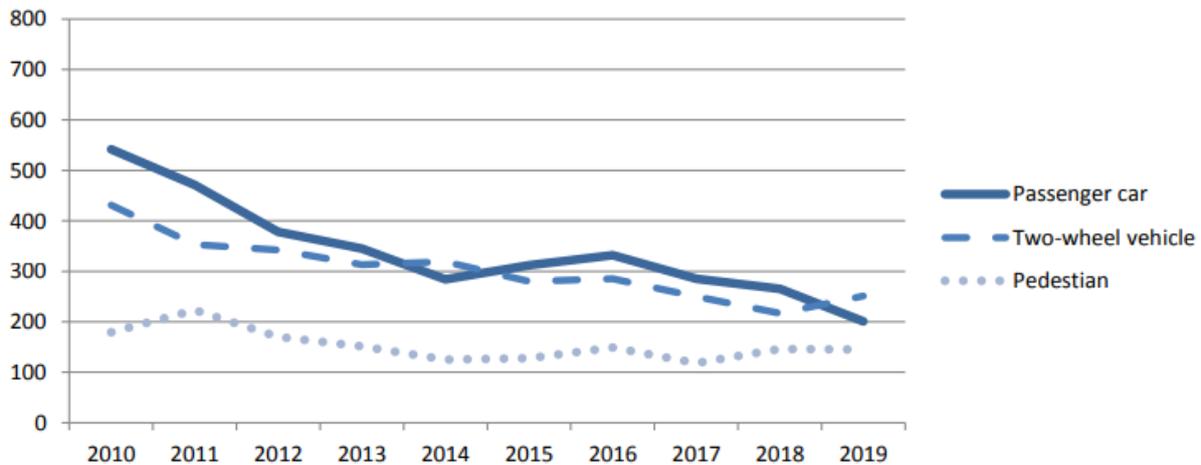


Figure 32 Number of road accident fatalities by mode of transport [Source: statistics.gr, 2019]

1.7.5 ITS applications in national and transnational road networks

The regulatory framework covering issues for Intelligent Transport Systems (ITS) deployment in Greece, derives mainly from Directive 2010/40/EU, adopted by the national legislation as per PD 50/2012, as well as other relevant delegated EU regulations/ decisions.

The Ministry of Infrastructure and Transport commenced in 2015 an operation to develop a National Transport Plan for Greece with the aim to provide the basis for sustainable transport infrastructure and service development in Greece over the medium (2027) to long-term horizon (2037). The development of the Plan includes the Strategic framework for road safety 2011-2020 and the National ITS Strategy 2015-2025

The National ITS Strategy 2015- 2025 aims to create a coherent and effective framework for the development and operation of ITS across the country. It is envisaged that ITS will modernise the transport sector and generate social, environmental, and economic benefits. The core mission of the strategy is to put forward new transport patterns, changing the way people and goods are moved, in order to find ways to upgrade the saturated transport systems without major increase in investment capitals.

The measures proposed in the Plan concerns the promotion and wide implementation of available ITS solutions, as per the current National ITS Strategy.

The below indicative list consists of the primary source of ITS actions, as identified in the National ITS Strategy:

- **Information Systems** (advanced traveller information & route guidance (pre-trip, on-trip, multimodal, etc.); Traffic information (road safety information, real time traffic information); public transport information; points of interest (service areas, bus stops, toll stations, parking areas, intelligent truck parking, etc.); urban mobility centres; intermodal HUBs; National ITS Access Point; road data exchange centres (static, dynamic, real traffic, etc.); logistics (freight/cargo data exchange, etc.), etc.
- **Management Systems** (traffic & incident management) public transport management; low emission zones; modal shift & priority lanes; lane change management; construction/ maintenance road works

management; parking space management; freight & fleet management (intelligent truck parking); port safety & security management) Technology & Innovation Systems (electronic toll systems; smart ticketing; road charging – pricing; parking reservation services; law enforcement; intelligent vehicle systems; etc.

The Measure is expected to enhance the efficiency and sustainability of the entire transport system of the country, most of the benefits would be observed for operations along the Greek TEN-t road network.

1.7.6 Alternative fuel availability usage

According to National Transport Plan, the Greek transport system could do better on ensuring environmental sustainability and there is a relatively low level of international traffic with neighbouring countries.

First, the share of cleaner modes such as (preferably electrified) railways is very low. Second, road freight transport is not only massive but also very inefficient, undertaken by very old and polluting trucks with low load capacity. Third, the fleet moving passengers (buses and cars) is also very old with almost no presence of hybrid or electric vehicles.

In 2017 the Greek Government adopted the ‘National Policy Framework for the development of the market as regards alternative fuels in the transport sector and the deployment of the relevant infrastructure’. To gauge the future use of fuel in transport sector, these are the main findings:

- **Electricity:** In Greece, the use of electric vehicles is at embryonic stage, primarily taking the form of street cleaning or municipal police vehicles. Note that the first electric vehicle chargers were installed in Greece in 2011 and sales of electric vehicles started in 2013.
- **Hydrogen:** no regulatory framework has been put in place in Greece on the installation of hydrogen supply facilities at fuel and power supply stations.
- **CNG:** By 2025, the CNG vehicle penetration rate, compared to all vehicles in circulation in Greece, is expected -in keeping with other countries- to be 0.5%.
- **LNG:** In Greece, LNG is not used by heavy-duty vehicles and demand is not expected to change immediately, until a comprehensive LNG supply network is in place. The option of transporting LNG to all Greek regions presupposes the development of infrastructure to store LNG under suitable conditions. By developing a comprehensive LNG transport and storage network, it appears that, over time, there will be potential for supplying LNG to a large number of Greek regions.

With respect to the targets set by the NPF, in 2020 the state-of-art is the following:

- CNG infrastructures for road vehicles: 20 operating refuelling stations (2020 target: 22).
- LNG infrastructures for road vehicles: 0 operating refuelling stations (2025 target: 2).
- Electricity recharging points: 2000 operating recharging points (2020 target: 2000).

1.7.7 Key issues

This paragraph presents the most relevant issues highlighted by the analysis carried out on the road network by type of impact.

The impact of the existing problems on the efficiency of the road network has been therefore measured in terms of accessibility, safety/security, service, sustainability, and capacity.

The main problems or key issues identified with respect to the Greek road network are list in the following table. In the columns it is possible to know the relationships between each theme and the type of impact.

Table 51 Greece: Identified Key Issues by type of impact.

COUNTRY	KEY ISSUE	ACCESSIBILITY	SAFETY/SECURITY	SERVICE	SUSTAINABILITY	CAPACITY
GREECE	Most of the borders are with non-EU countries (non-Schengen)					

1.8 North Macedonia

1.8.1 Road network overview

According to the Public Enterprise for State Roads, the North Macedonian Road network is 14,182 km-long and includes 242km of Motorways, 911km of National roads, 3,771km of Regional and local roads and 9,258km of roads under municipal responsibility. The road network is asphalted for approximately 9,000 km.

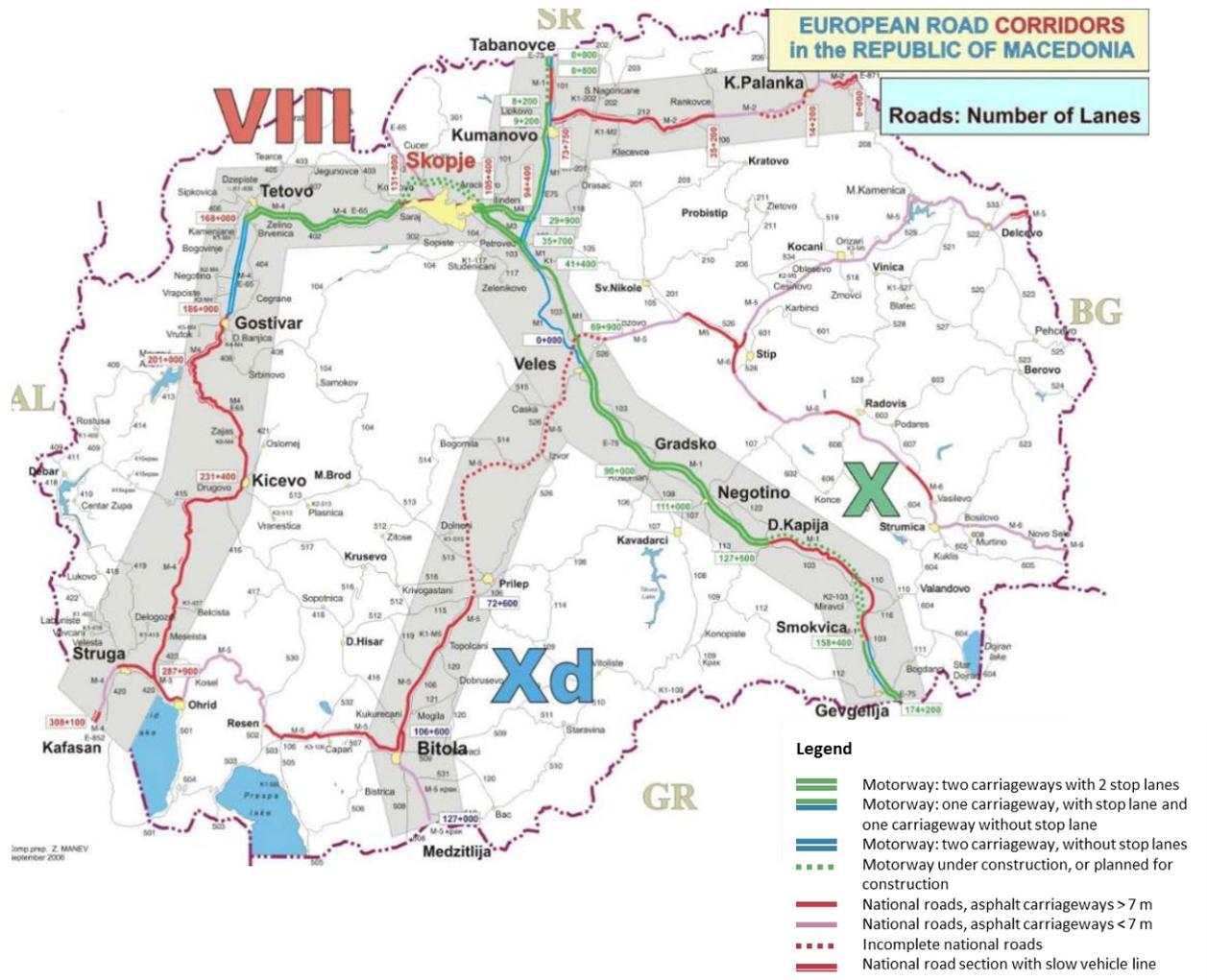
According to the current legislation, the Public Enterprise for State Roads is the authority responsible for managing, construction, reconstruction, maintenance, and protection of the state roads in the Republic of Macedonia.

Macedonian law established the toll payment for Motorway usage. The toll for road use in Macedonia is collected by an open toll collection system at 14 toll plazas, and it depends on the vehicle category, number of the axles and the height of the first axles. The toll fee is charged per kilometre travelled of the length of the section for which the toll is charged.

Currently, at 9 toll plaza is established ETC toll collection system (TAGs and Smart card payment). At dedicated lanes for TAG ta passing on the lane is just decreasing the speed to 30 km/h without stopping.

The weakness of the tolling system is that when there is a lot of traffic (days of holidays), the highway drivers are waiting in queues to pay tolls. For example, one trip of 50 km requires 3 or 4 stopping and waiting at toll plazas.

Figure 33 Road network on the TEN-T Corridor VIII and X, X-d [Source: Draft National Transport Strategy]



The main two Pan-European corridors that intersect the country are Corridor VIII (east-west) and Corridor X (north-south).

The connection of the TEN-T Core Network Corridors in Republic of Macedonia is along a north - south axis via Corridors VIII and X/X-d that have an important role because they support the easy movement of people and goods within the country and also provide connections to regional neighbours and further to all other European Countries.

The Corridor X/X-d passes in direction North - South and the Corridor VIII in direction Northeast – Southwest.

1.8.2 Road traffic volumes (passengers and freight)

Transportation of goods and passengers takes place mostly by road in the Republic of North Macedonia. Road transport also prevails over rail transport.

Looking at passenger transport figures by mode, this shows a strong reduction in the use of rail transport which passes from more than 1,5 million of passenger recorder bask in 1996 and some pecks in 2000 with more than 1,8 million of passenger per year to just 0.5 million in 2019.

Road transport decreases as well in the last decades, while air transport is the only that shows an increase in the number of passengers who reached more than 2.5 million in 2019.

The following table by the National Statistical Office summaries the transport data for North Macedonia.

Table 52 Passenger transport [Source: stat.gov.mk, 2020]

14.01. Транспорт и други услуги

14.01. Transport and other services

T-14.01.2: Патнички сообраќај

T-14.01.2: Passenger transport

	Превоз на патници во илјади / Transport of passengers, in '000					Патнички километри / Passenger-kilometres		
	железнички превоз rail transport	езерски превоз lake transport	воздухопловен превоз air transport	патен превоз road transport	градски превоз urban transport	железнички превоз во милиони rail transport in '000.000	езерски превоз во илјади lake transport, in '000	патен превоз во милиони road transport, in '000.000
1996	1 549	5	536	17 039	123 064	120	128	888
1997	1 713	4	482	20 355	109 052	141	95	877
1998	1 716	15	577	18 310	135 254	150	375	864
1999	1 662	10	1 052	18 336	136 231	150	265	889
2000	1 862	10	1 009	15 407	111 408	176	321	774
2001	1 344	3	508	13 724	98 474	133	117	831
2002	930	6	556	13 854	101 709	98	389	1 042
2003	902	4	530	11 836	94 744	92	190	1 344
2004	917	5	522	9 295	84 060	94	92	1 110
2005	903	14	575	9 442	78 009	94	280	1 087
2006	1 011	17	592	8 862	66 687	105	317	1 016
2007	1 104	47	669	9 412	61 005	109	1 063	1 027
2008	1 448	55	694	10 147	64 378	148	2 560	1 239
2009	1 523	63	635	11 607	65 151	154	8 788	1 213
2010	1 512	-	756*	13 474	64 120	155	-	1 441
2011	1 421	28	835	15 644	67 072	145	850	1 640
2012	1 013	18	913	15 595	69 731	99	899	1 403
2013	853	32	1 067	16 052	69 063	80	608	1 395
2014	803	36	1 278	8 115 ¹⁾	84 476 ²⁾	80	741*	1 208 ³⁾
2015	1 022	39	1 561	8 074	80 316	178	875	1 248
2016	663	30	1 795	7 221	76 302	83	898	1 101
2017	500	45	2 027	7 775	72 117	59	1 007	1 248
2018	540	47	2 343	8 516	71 410	63	1 082	1 279
2019	549	49	2 676	6 471	72 040	61	1 132	1 046

¹⁾ Од 2014 година, поради методолошки измени, податоците за патниот патнички транспорт се однесуваат само на националниот и меѓународниот превоз.

²⁾ Вклучен е и приградскиот превоз.

³⁾ Due to methodological changes, since 2014, data on road passenger transport refer only to national and international transport.

⁴⁾ Suburban transport is included.

On the other hand, rail transport of freight shows fluctuation over the last decades. The tons transported by rail increased between 1996 to 2008 and following the crisis period the values decrease rapidly up to 2017 when a slight increase was recorder. To date rail transport shares a very residual part of the whole traffic, if compared to air transport and road transport.

On the other hand, road transport shows a constant increase in volumes also during and following the 2008 crisis period. To date tonnes transported by road are more than three time the values recorder in 2000.

Table 53 Freight transport [Source: stat.gov.mk, 2020]

14.01. Транспорт и други услуги					
14.01. Transport and other services					
T-14.01.1: Товарен сообраќај					
T-14.01.1: Freight transport					
	Превоз на стока / Transport of goods			Тонски километри / Tonne-kilometres	
	железнички превоз во илјади тони rail transport, in '000 tonnes	воздухопловен превоз во тони air transport in tonnes	патен превоз во илјади тони road transport, in '000 tonnes	железнички превоз во милиони rail transport, in '000.000	патен превоз во милиони road transport, in '000.000
1996	1 804	3 807	2 161	271	796
1997	2 104	4 628	2 374	279	896
1998	2 694	5 022	1 895	408	894
1999	2 166	11 282	2 327	380	839
2000	3 231	3 512	2 123	527	776
2001	2 799	2 329	21 573 ¹⁾	462	3 131 ¹⁾
2002	2 208	2 139	20 471	334	3 679
2003	2 390	1 802	22 751	373	5 450
2004	2 641	1 770	23 249	426	5 341
2005	3 129	1 624	25 098	530	5 576
2006	3 800	1 680	31 083	614	8 299
2007	4 686	1 941	24 359	779	5 938
2008	4 206	2 159	20 075	743	3 978
2009	2 929	2 127	33 244	497	4 035
2010	3 097	2 080	34 782	525	4 235
2011	2 770	2 185	32 537	479	5 381
2012	2 539	2 095	31 340	423	5 802
2013	2 283	2 515	31 346	421	5 145
2014	2 376	3 428	31 587	411	7 399
2015	1 566	2 341	36 513	278	6 759
2016	1 358	2 620	51 308	222	6 946
2017	1 558	2 495	64 221	277	7 425
2018	1 679	2 982	69 139 ²⁾	307	10 637 ²⁾
2019	1 839	3 087	69 395	350	10 266

¹⁾ Податокот за патен превоз од 2001 година се изработува по нова методологија, а вклучен е и превозот за сопствени цели.
²⁾ Since 2001, data on road transport are calculated by a new methodology; own-account transport is included
³⁾ Од 2018 година вклучени се транзитот и каботажата
⁴⁾ Since 2018, transit and cabotage transport are included

The most carried commodities are metal and mining goods represent the large majority of traffic (60%) followed by mineral products (non-metallic) coke and refined petroleum and food products, beverage and tobacco.

The high share in the use of private transport vehicle is also shown by the high motorization rate. The following shows the ascending trend of total of registered motor vehicles by type. The motorization rate of Macedonia grew in the ten-years interval 2009-2019 from 137 to 205 passenger cars per 1,000 inhabitants, but comparing to the EU rate mean, it remains relatively low.

Table 54 Registered motor vehicles and trailers [Source: Ministry of Internal Affairs, 2020]

	2015	2016	2017	2018	2019	
Вкупно	451 724	461 799	474 516	485 612	495 636	Total
Мотоцикли	10 050	11 697	14 129	13 343	11 987	Motorcycles
Патнички автомобили	383 833	394 934	403 316	415 062	426 045	Cars
Автобуси	3 243	3 230	3 188	3 201	3 144	Buses
Товарни автомобили	33 237	34 669	35 912	37 010	38 048	Goods vehicles
Влечни возила	5 451	5 640	5 778	5 613	5 610	Road tractors
Трактори	6 536	2 845	2 707	2 409	1 903	Tractors
Работни возила	612	623	834	728	619	Work vehicles
Приклучни возила	8 762	8 161	8 652	8 246	8 280	Trailers

1.8.3 Border checkpoints infrastructural and operative characteristics

North Macedonia is a candidate for the enlargement of European Union country and, even if it is not a Schengen area member, North Macedonian travellers can enter the Schengen Area without a visa. The country is landlocked. North Macedonia borders:

- in the North Serbia and Kosovo, with a border of 221 km long,
- in the East Bulgaria, an EU member state, with a border of 148 km long,
- in the South Greece, an EU member state, with a border of 246 km long,
- in the West Albania, with a border of 151 km long.

The government considers the border crossing points located on the Corridors VIII and X to be strategic border crossing points, whilst others are classified as regional and local border crossing points. The main border crossings with neighbourhood countries are the following.

Border with Serbia:

- border crossing Presevo–Tabanovce (Motorway A1, which continues in Serbia as Motorway A1).

Border with Bulgaria:

- Deve Bair border crossing (Motorway A2, which continues in Bulgaria as road 6),
- Delchevo border crossing (Motorway A3, which continues in Bulgaria as road 106),
- Novo Selo border crossing (Motorway A4, which continues in Bulgaria as road 198).

Border with Greece:

- Bogorodica border crossing (Motorway A1, which continues in Greece as Motorway A1).
- Medzhitlija border crossing (Motorway A3, which continues in Greece as road E03 and Motorway A27).

Border with Albania:

- Kjafasan border crossing (Motorway A3, which continues in Albania as road SH9),
- Blato border crossing (road R1202, which continues in Albania as road SH44).

1.8.4 Road safety in national and transnational networks

According to the Sector Operational Programme for Transport 2014-2020 for Macedonia, the Government is politically and financially committed to reduce the death toll on the roads by 50% within a period of 10 years.

The Plan of the North Macedonia Government is in line with the goals set in the EU White Paper on transport from 2011 which sets the goal for moving close to zero fatalities in road transport by 2050 and halving road casualties by 2020.

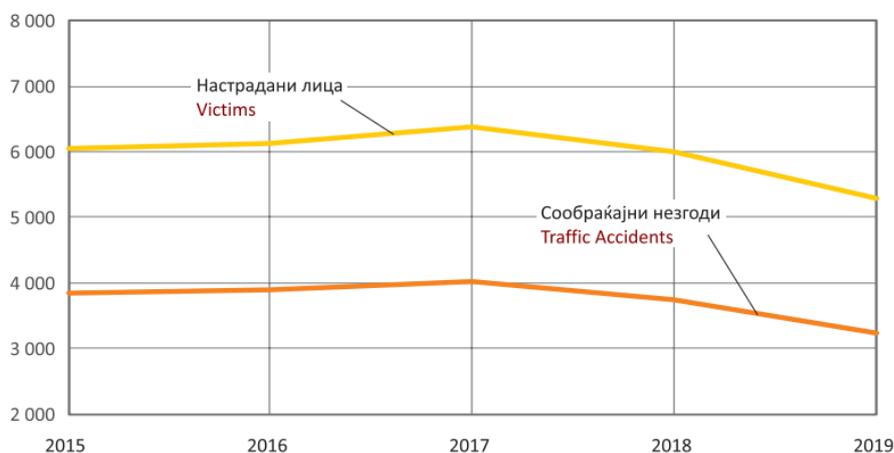
The State Security Council on Road Traffic developed the Second National Strategy to improve road safety in 2015 -2020.

The following table show trend on the number of accidents in the last five years. Accidents reduced in absolute value and in consequence of this also deaths and injured people reduced. In the same period the number of registered motor vehicle increase of about 40 thousand of unit.

Table 55 Main indicators of road safety [Source: Ministry of Internal Affairs, 2020]

	Население на средина на годината во илјади Midyear population, in '000	Регистрирани патнички моторни возила ¹⁾ Registered motor vehicles ¹⁾	Сообраќајни незгоди со настрадани лица ²⁾ Accidents with victims ²⁾			Незгоди на 1000 моторни возила Accidents per '000 vehicles	Настрадани лица Victims in accidents			Настрадани лица на 1 сообраќајна незгода Victims per accident	Настрадани лица на 10000 жители Victims per 10000 inhabitants
			вкупно total	од тоа загинати killed	од тоа повредени injured		вкупно total	загина-ти лица killed	повреде-ни лица injured		
2015	2 070	432 912	3 854	135	3 719	8.9	6 061	148	5 913	1.6	29
2016	2 072	453 638	3 902	150	3 752	8.6	6 136	165	5 971	1.6	30
2017	2 071	451 735	4 019	137	3 882	8.9	6 379	155	6 224	1.6	31
2018	2 075	464 023	3 740	118	3 622	8.1	5 993	133	5 860	1.6	29
2019	2 077	475 369	3 233	109	3 124	6.8	5 296	132	5 164	1.6	26

Figure 34 Road accidents and victims in accidents [Source: stat.gov.mk, 2020]



1.8.5 ITS applications in national and transnational road networks

The new National Transport Strategy categorizes ITS in main strategic objectives, however the transposition of the EU ITS Directive and supplements – Delegated Acts and mandatory adoption and use of all CEN/TC 278 standards – is not yet completed.

The introduction of communication-information system for traffic control and management on Corridor X is foreseen, however, so far existing ITS applications are limited to control centres.

Regarding freight transport and customs procedures on common crossings points on Core and Comprehensive network, the country is one of three non-EU countries (beside Serbia and Turkey) who have implemented The New Computerised Transit System (NCTS).

1.8.6 Alternative fuel availability usage

Information on the availability of alternative fuel in North Macedonia and plans for their implementation are not available.

1.8.7 Key issues

This paragraph presents the most relevant issues highlighted by the analysis carried out on the road network by type of impact.

The impact of the existing problems on the efficiency of the road network has been therefore measured in terms of accessibility, safety/security, service, sustainability, and capacity.

The main problems or key issues identified with respect to the North Macedonian road network are list in the following table. In the columns it is possible to know the relationships between each theme and the type of impact.

Table 56 North Macedonia: Identified Key Issues by type of impact.

COUNTRY	KEY ISSUE	ACCESSIBILITY	SAFETY/SECURITY	SERVICE	SUSTAINABILITY	CAPACITY
NORTH MACEDONIA	Very limited extension of the Motorway network					
	Low performance of the Motorways (travel time)					
	Very limiter ITS deployment					

1.9 Italy

1.9.1 Road network overview

Road network in Italy is classified based on infrastructure characteristics as well as by administrative category as detailed by the national regulation (*Codice della Strada*).

In terms of infrastructure, categories distinguish mainly on dimension, speed limit and allowed users. The following main categories represent the Italian network:

- **Autostrada (Motorway):** independent carriageways or separated by traffic dividers with at least two lanes (one-way), defined by green signs and named with the prefix A and progressive number this type of road has a speed limit of 130 Km/h, with some exception for certain type of vehicle (based on weight and dimension) and access is usually guarantee by paying a toll (fixed or variable depending on the road and vehicle type).
- **Main Roads (Freeway):** often dual carriageway, without toll system, are numbered and named with the prefix SS (National network) SR (Regional network) or SP (Provincial network) and have a maximum speed limit of 110 Km/h.
- **Urban and local road:** usually with single carriageway, without toll system have a range of maximum speed of between 30 Km/h to 70 Km/h depending on the urban context.

The national infrastructure network classification (SNIT 2001) sets Autostrade on the 1st level (main network), corresponding to the most relevant network including the European TEN-T (Core and Comprehensive) and all other roads are 2nd level. The whole network extends for about 30 thousand of kilometres of which almost 7 thousand of kilometres are Autostrade, 6 thousand with tolling system applied.

Highway toll regulation is quite various in Italian road network. There are a wide range of schemes applied at national level due to the different authorities managing the road network. Generally, the main network is a closed system and fares are based on the distance travelled, but there are free and fixed fare sections too. Entry and exit from the system are regulated by stations through which users must transit.

The following table provide an overview of the extension of the network by administrative classification separated by main national network (Motorways), other national roads, regional and provincial network.

Table 57. Italian road network extension by administrative classification - Years 1990, 2000-2019 (kilometres of road)

YEAR	TYPE OF ROAD (ADMINISTRATIVE CLASSIFICATION)			
	Road of national relevance		Regional/Provincial	Total network
	Motorways	Other roads		
1990	6.185	44.742	98.396	149.323
2000	6.478	46.556	102.076	155.110
2010	6.668	20.856	146.280	173.804
2013	6.751	19.920	142.333	169.004
2014	6.844	19.894	143.047	169.785
2015	6.943	21.686	143.053	171.682
2016	6.943	20.786	142.632	170.361
2017	6.943	22.399	142.139	171.481
2018	6.966	23.335	135.691	165.992
2019	6.977	23.305	137.283	167.565

Considering the Adriatic-Ionian Region, the following table summarises the Italian Motorway network belonging and its main characteristics in terms of length, the origin and destination, the tolls applied and whether this is part of the TEN-T Core or Comprehensive European network.

Figure 35. Italian motorway network part of Adriatic-Ionian Region



Table 58. 1st level network characteristics

ID	ROAD NAME	ORIGIN-DESTINATION	TEN-T	TOOLS APPLIED	LENGTH
	(Original language)	Nodes of the network		All/Partial/Free	(km)
A1	Autostrada del Sole	(Milano - Napoli)		Partial	760
A2	Autostrada del Mediterraneo	(Salerno - Reggio Calabria)		Free	433
A3	Autostrada A3	(Napoli - Salerno)		Free	52
A4	Autostrada Serenissima	(Torino - Trieste)		Partial	524
A7	Autostrada dei Giovi o Serravalle	(Milano - Genova)		Partial	136
A8	Autostrada dei Laghi	(Milano - Varese)		All	44
A9	Autostrada dei Laghi	(Lainate - Chiasso)		All	32
A13	Autostrada Euganea	(Bologna - Padova)		All	117

ID	ROAD NAME	ORIGIN-DESTINATION	TEN-T	TOOLS APPLIED	LENGTH
A14	Autostrada Adriatica	(Bologna - Taranto)		All	744
A15	Autostrada della Cisa	(Parma - La Spezia)		All	109
A16	Autostrada dei Due Mari	(Napoli - Canosa)		All	173
A18	Autostrada A18	(Messina - Catania / Siracusa - Isipica e Pozzallo)		All	125
A19	Autostrada A19	(Palermo - Catania)		Free	192
A20	Autostrada A20	(Messina - Buonfornello)		Partial	183
A21	Autostrada dei Vini	(Torino - Brescia)		Partial	239
A22	Autostrada del Brennero	(Brennero - Modena)		All	315
A23	Autostrada Alpe-Adria	(Palmanova - Tarvisio)		All	120
A24	Autostrada dei Parchi	(Roma - Teramo)		Partial	167
A25	Autostrada dei Parchi	(Torano - Pescara)		All	115
A26	Autostrada dei Trafori	(Genova Voltri - Gravellona Toce)		Partial	197
A27	Autostrada d'Alemagna	(Venezia - Belluno)		Partial	183
A28	Autostrada A28	(Portogruaro - Conegliano)		Partial	49
A29	Autostrada A29	(Palermo - Mazara del Vallo)		Free	115
A31	Autostrada della Val d'Astico	(Badia Polesine - Piovene Rocchette)		Partial	89
A34	Autostrada A34	(Villesse - Gorizia)		Free	17
A35	Autostrada BreBeMi	(Brescia - Milano)		All	63
A36	Autostrada Pedemontana Lombarda	(Cassano Magnago - Lentate sul Seveso)		All	22
CT-SR	Autostrada Catania - Siracusa	(Catania - Siracusa)		Free	25

1.9.2 Road traffic volumes (passengers and freight)

In 2019, 84,655 million of vehicle-km interested the Motorway network, of which 64,690 million were light vehicle and 19,964 million were heavy vehicles. Looking at the last couple of years, road traffic is slightly increasing especially heavy vehicle traffic.

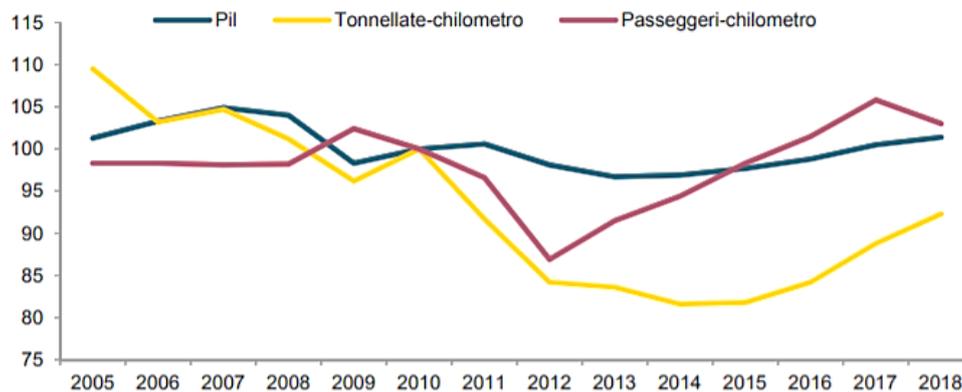
In respect to road freight transport most of it is moved along medio-long distances. The following table summarises the freight volumes moved on the road network in 2018 (all network)

Table 59. Road traffic on the Motorway network by type of transport

TYPE OF TRANSPORT	TONNES	TONN-KM
Local transport	389,179,370	7,724,440
Medium-long distance	534,552,943	117,190,503
Total	920,732,313	124,914,943

If we look at the evolution of Gross Domestic Product compared to passenger-km and tonn-km on the Italian road network is rather clear the existing relationship among the three and, how freight transport is highly related with the economic situation.

Figure 36. Trends of Gross Domestic Product compared to road freight (yellow) and passenger traffic (red) (2005-2018). [Source: ISTAT, 2021]



1.9.3 Border checkpoints infrastructural and operative characteristics

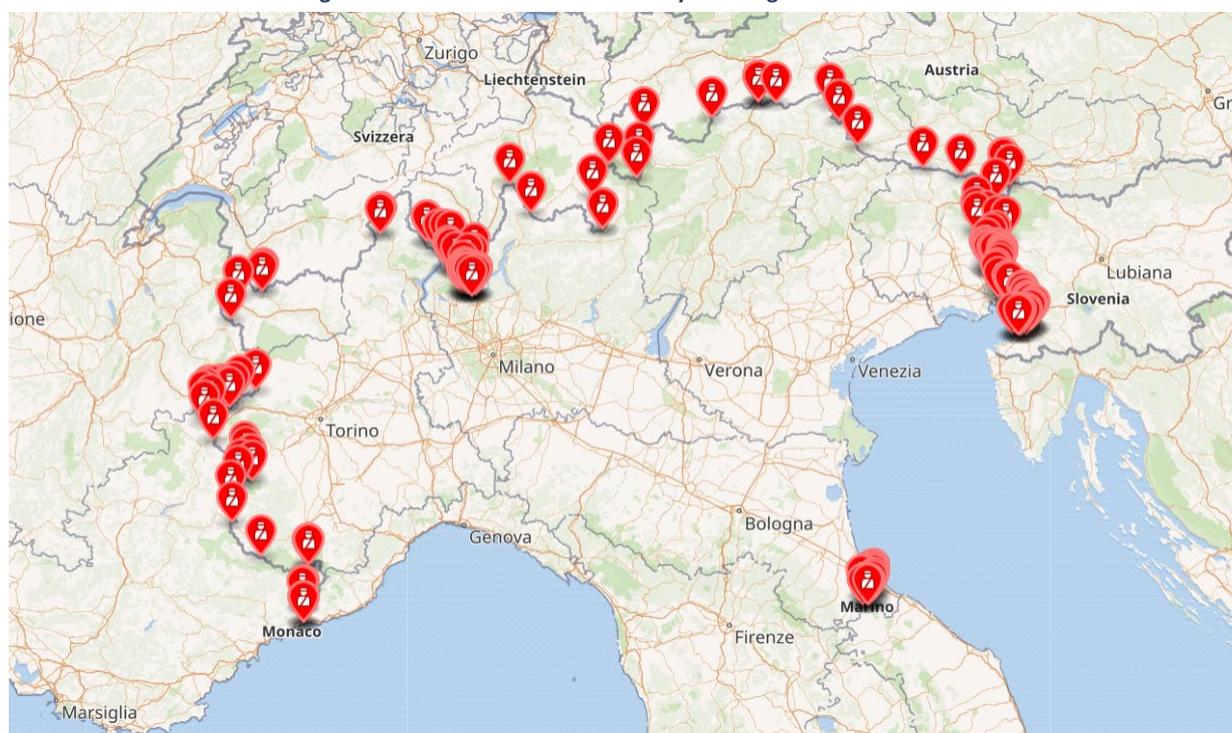
The Italian part of the Adriatic-Ionian territory borders to the North with Switzerland and Austria and on the East side with Slovenia. Since Italy, Austria and Slovenia are part of the European Union the Schengen Treat applies in respect to the cross-border traffic both passenger and freight. No customs existing along these borders and users are free to cross without the need to stop at national borders.

Between Austria and Italy there are many road passages and the main are the Brenner pass along the Italian A22 between Bolzano and Innsbruck and Tarviso pass along the Italian A23, which continue in Austria (A2) to Villach.

Between Italy and Slovenia (border is just 232 Km long) and main road passage are Sant'Andrea between Gorizia e Veretoiba along the Italian A34 which continue as H4 in Slovenia and Ferneti pass between Monrupino and Sesana through the link RA 14.

As concern the border with Swiss, even if the country agreed on Schengen Treaty, and no systematic controls are carried out at border sections, customs controls are still undertaken on a random based for passenger cars. Since Swiss does not participate to the European Custom Union, freight traffics still have to undertake the custom control which can occur digitally of on traditional ways at border crossing station, which are still operative.

Figure 37. Cross borders between Italy and neighbourhoods' countries



The following table summarises the border crossing between Italy and Switzerland.

Table 60. Border crossing between Italy and Switzerland

ITALIAN PROVINCE	SWISS REGION	BORDER CROSSING
Sondrio	Grigioni	Passo dello Spluga
Sondrio	Grigioni	Val Bregaglia (Villa di Chiavenna - Castasegna)
Sondrio	Grigioni	Campocologno (Tirano - Brusio)
Sondrio	Grigioni	Forcola di Livigno (Livigno - Poschiavo)
Sondrio	Grigioni	Valico del Gallo - Galleria Munt La Schera (Zernez - Lago di Livigno)
Sondrio	Grigioni	Gioigo di Santa Maria/Umbraillpass (Bormio - Santa Maria Val Müstair)
Grigioni		Valico del Gallo - Galleria Munt La Schera (Zernez - Lago di Livigno)
Bolzano	Grigioni	Tubre - Müstair
Como	Ticino	Maslianico - Pizzamiglio
Como	Ticino	Brogeda
Como	Ticino	Chiasso-Strada
Como	Ticino	Drezzo - Pedrinato
Como	Ticino	Crociale dei Mulini - Ponte Faloppia
Como	Ticino	Ronago - Novazzano fraz. Marretto
Como	Ticino	Bizzarone - Novazzano fraz. Brusata
Como	Ticino	Bizzarone - Santa Margherita di Stabio
Como	Ticino	Lanzo d'Intelvi - Arogno

ITALIAN PROVINCE	SWISS REGION	BORDER CROSSING
Como	Ticino	Oria - Gandria
Varese	Ticino	Gaggiolo (Cantello) - Gaggiolo (Stabio)
Varese	Ticino	San Pietro di Clivio – San Pietro di Stabio
Varese	Ticino	Clivio – Ligornetto
Varese	Ticino	Saltrio - Arzo
Varese	Ticino	Porto Ceresio - Brusino Arsizio
Varese	Ticino	Ponte Tresa
Varese	Ticino	Cremonaga – Ponte Cremonaga
Varese	Ticino	Luino - Fornasette
Varese	Ticino	Dumenza Fraz. Palone – Cassinone
Varese	Ticino	Biegno - Indemini
Varese	Ticino	Zenna - Dirinella

1.9.4 Road safety in national and transnational networks

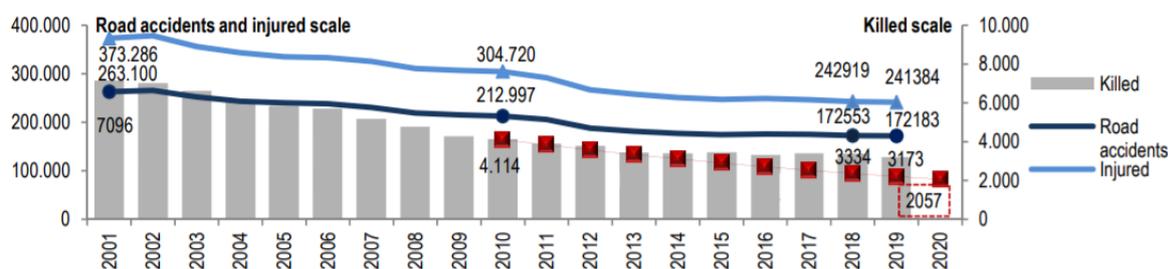
Since the road network in Italy is all paved and in good generally in good condition, road safety in Italy is a matter distraction and failure to observe precedence rules and high speed are the most frequent misbehaviours. Accident caused by lack of attention represent the 15,1%; failure to comply with priority rules are 13,8% and speed limit the 9,3% of total accident.

Italy registered an overall decrease in the number of road deaths in 2019. According to the latest available data, 3 173 persons lost their lives in traffic crashes in Italy in 2019. This represents a 4.8 % decline on 2018 (43 road fatalities on motorways in 2018 were due to the collapse of Ponte Morandi), when 3, 334 road deaths were reported, a 1.3% decrease in 2017.

Looking at absolute values and trends, the number of accidents and related fatalities has constantly decreased in the last decades. As showed in the figure below, since 2001 the number of accidents decreased by 55% and even more the deaths (from more than 7.000 to less than 3.000) while injuries decreased by 35%.

Comparing with 2018, number of death and injury in 2019 are decreased. In that year in fact, road accidents were 172.183 on Italian road, against 172.553 in 2018.

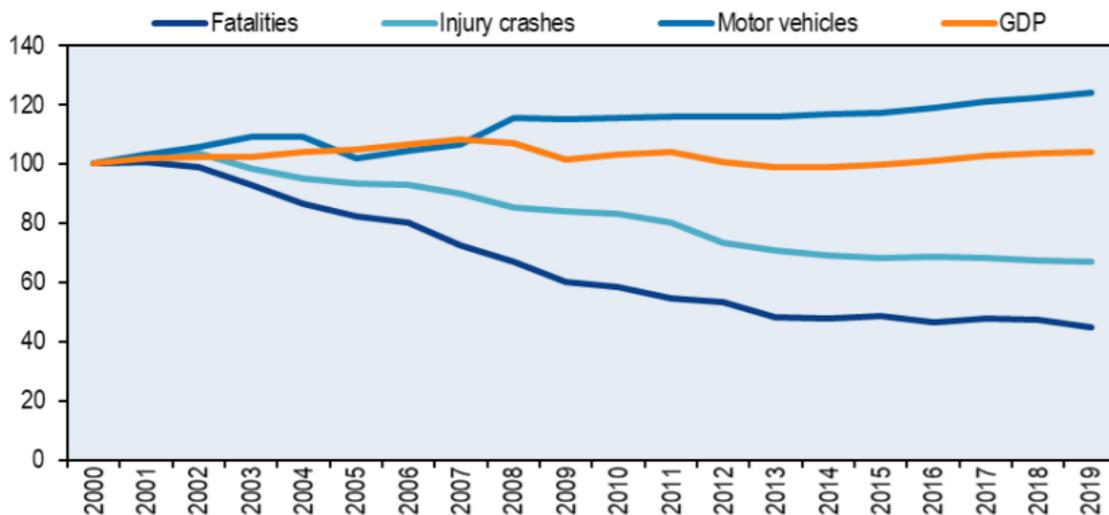
Figure 38. Road accidents resulting in death or injury, killed, and injured [Source ISTAT, 2021]



The number of traffic deaths per 100 000 inhabitants in Italy fell 58% between 2000 and 2019, when 5.3 traffic deaths per 100 000 inhabitants were recorded, compared to 12.4 in 2000. By way of comparison, the average in the European Union was 5.1 deaths per 100 000 inhabitants in 2019.

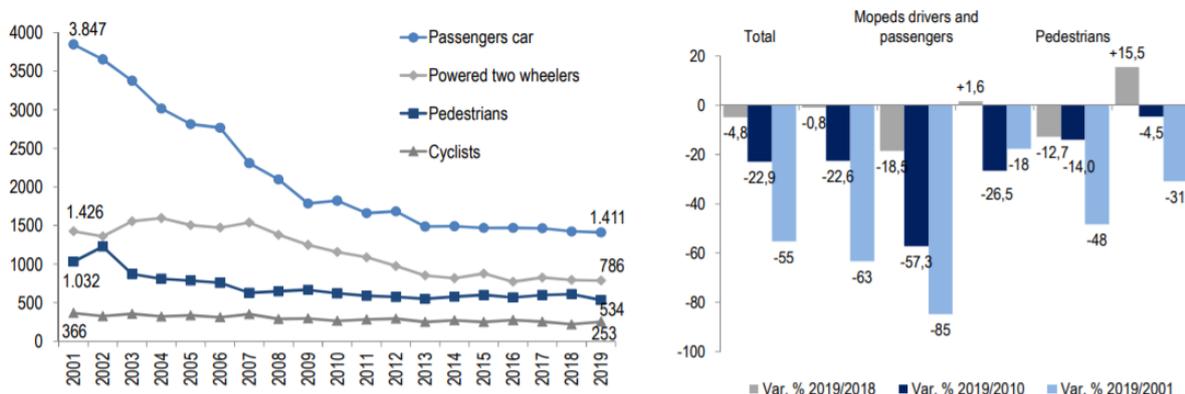
Italy recorded 0.6 road fatalities per 10 000 registered vehicles in 2019. This represents a decrease of 60% compared to the year 2000, when the rate of deaths to registered vehicles stood at 1.6. This is partly the result of new active prevention technologies installed on modern passenger cars.

Figure 39 Figure 11 Road safety, vehicle stock and GDP trends (index 2000=100) [Source: OECD, 2019]



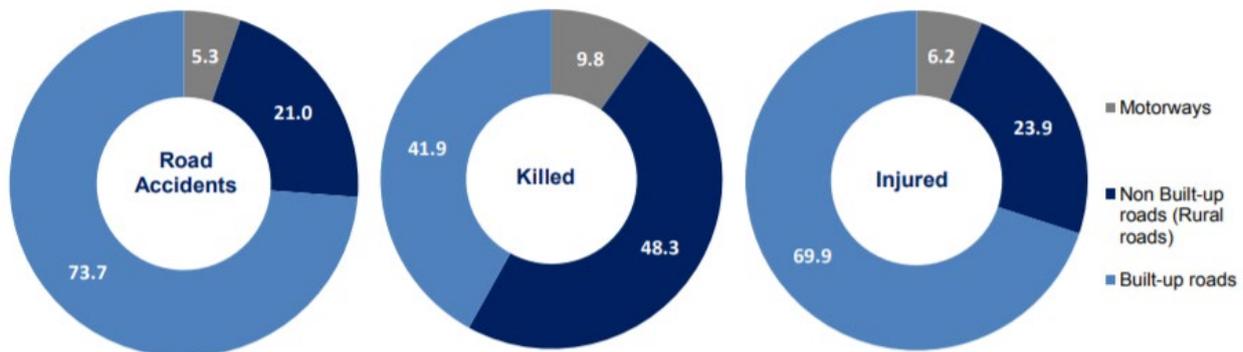
Among the victims by mode of transport in the last decade (2010-2019) and in recent years different trends characterise more vulnerable users, such as pedestrian and cyclists and motor vehicle users. In particular, passenger car and powered two wheelers' vehicles show a constant decrease in the number of killed in road accidents while pedestrian and cyclists are almost constant with an increase in the last year. The increase of victims among cyclists, mainly on primary roads, in built-up and outside urban area, is also associated to a growth in road accidents involving bicycles (in 2019 sale of bicycles and electric bicycles increased by 7% compared to 2018).

Figure 40. Killed in road accidents by mode of transport [Source ISTAT, 2021]



Considering the three types of roads disaggregated by Motorways, Urban roads (built-up area), Rural roads (non-built-up area), the highest number of accidents occurs in rural roads (usually with maximum speed range between 70 Km/h to 90 Km/h while Motorways only represent 5.3% of road accidents, 9.8% of killed and 6.2% of injured).

Figure 41. Road accidents resulting in death or injury, killed and injured by road [Source ISTAT, 2021]



With the aim, to reduce the number of road accidents and related death and injuries and more in general to increase the level of safety for all road users, the National Government is approving a National Plan for Road Safety which includes intervention and plans involving road managing authorities to adopt safety measures and actions on the road network¹⁵.

1.9.5 ITS applications in national and transnational road networks

Several ITS applications have been experimented in Italy and some application already tested are now in force. One of the most interesting examples in the ITS field is represented by the project Smart Road Cortina 2021 where the Infrastructure Manager ANAS is planning to implement smart road technologies on the State Road SS51 in northern Italy (80km). In view of the world competition in Cortina in 2021 the project aims to improve the efficiency of road traffic and improve the security and comfort of travellers using Internet of Things (IoT) technologies. In particular, the technologies that will be installed will allow to:

- provide information to users to prevent unsafe behaviour.
- manage the road transport demand.
- traffic control with dynamic signalling systems.
- monitoring in real time the road infrastructure condition.

This project ¹⁶is expected to implement the following infrastructures and equipment on the road:

- TEST of C-ITS Services: V2V (Vehicle-to-Vehicle) and V2I (Vehicle-to-Infrastructure) connectivity and Wi-Fi connectivity integrated in a single RSU (Road Side Unit).
- RWIS and cutting-edge video analysis platforms: Smart cameras that enable video analysis to check on traffic, road network's conditions.
- AREA System: Innovative IoT devices to check and warn about roadworks.
- Good Vibrations App: A smartphone application to monitor infrastructures with the smartphone device detection technique.

¹⁵ <https://www.asaps.it/downloads/files/Piano%20Nazionale%20Sicurezza%20Stradale%202030.pdf>

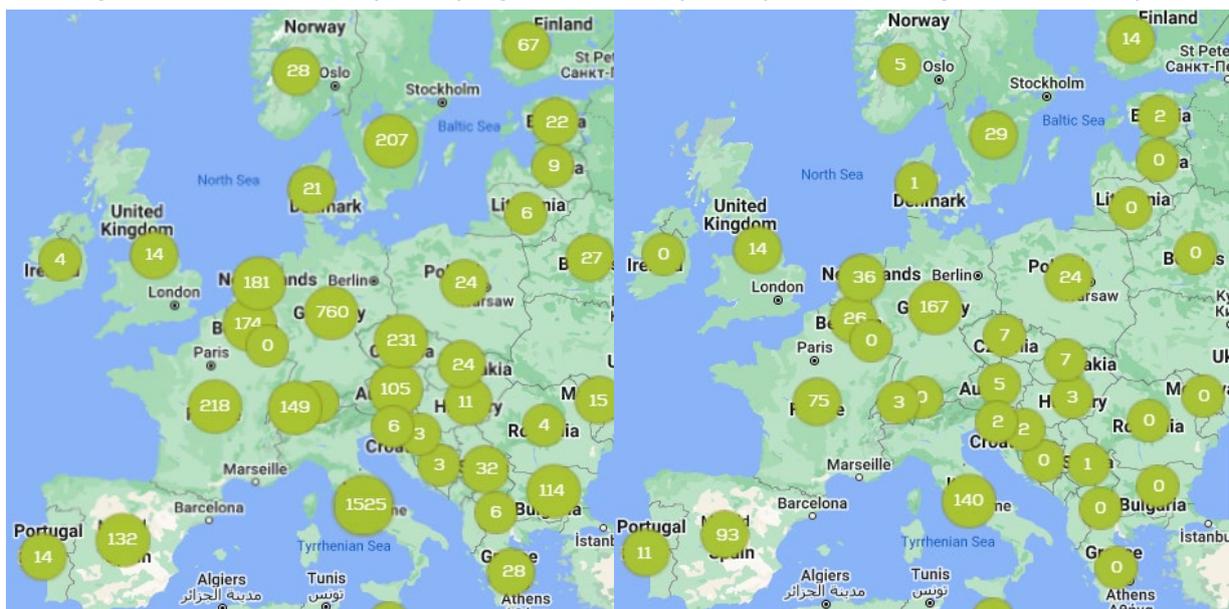
¹⁶ https://www.stradeanas.it/sites/default/files/pdf/Anas_Smart_Road_Cortina_2021-English_version.pdf

- Innovative Design: Multi-function concept design according to the canons of modern artistic works that respect the natural surrounding landscape.
- Smart Platforms: Remote control and management of the technologies in the roadway, including tunnels.

1.9.6 Alternative fuel availability usage

Concerning Alternative fuels, such as LNG (Liquefied Natural Gas), CNG (Compressed Natural gas) and Electric charging station, the network is rather ununiform between northern regions and southern regions. As regards the methane (CNG) and LNG Italy has the higher number of stations all over the Europe. This is due to historical reason and a particular availability of this type of fuels in some part of Italy (especially in the northern area).

Figure 42. Left: CNG station by country; Right: LNG station by country [Source: www.ngva.eu/stations-map]



In Italy there are about 1.500 CNG stations all over the network while only a small part is located along the Motorway. The reason of lack of stations within the main network is all well due to historical reason related with the security to stock Methane in certain areas.

LNG stations in the Italian territory are about 140 while electric power stations, despite still represent a very minor part compared to the traditional and gas-based fuel, are increasing quite fast in the last years, especially along the motorway network.

The following table provide the number and location of electric power stations and the characteristics of the charging system.

Table 61. Electric power stations on the main network by region

MOTORWAY	LOCATION/NAME	CHARACTERISTICS
A1	Frascati Est	
	Secchia Ovest	2 Ultra-Fast power stations 300kW
	Flaminia Est	
A4	Monte Baldo Ovest	4 power stations up to 11kW
	Tesina Est	1 power station up to 22kW
	Limenella Ovest	1 power station up to 50kW
A5	Dorno Est/Ovest	2 power stations up to 43kW (CA); 50Kw (DC)
A7	Rio Rinovo	4 Ultra-Fast power stations 350kW
	Ceriale Sud	4 Ultra-Fast power stations 350kW
A12	Brugnano Est e Ovest	2 power stations
A15	Tugo Ovest	1 power station up to 22kW
	Montaio Ovest	1 power station up to 50kW
A22	Plessi Museum	16 power station (Tesla), 1 Ultra-Fast 150kW
	Bressanone/Val Pusteria	1 power station 50kW + 1 power station 22Kw (AC)
	Paganella Est/Ovest	2 power station 50kW
	Nogaredo Ovest	1 power station 50kW + 1 power station 22Kw (AC)
	Rovereto sud	2 power station 50kW + 1 power station 22Kw (AC)
	Affi	16 power stations (Tesla) + 1 power station 50kW + 1 power station 22Kw (AC)
	Mantova Nord	1 power station 50kW + 2 power Station 22Kw (AC)
	Po Ovest	1 power station 50kW + 2 power Station 22Kw (AC)
A25	Montevelino Nord/Sud	1 power station up to 22kW
	Brecciarola Nord/Sud	1 power station up to 22kW

1.9.7 Key issues

This paragraph presents the most relevant issues highlighted by the analysis carried out on the road network by type of impact.

The impact of the existing problems on the efficiency of the road network has been therefore measured in terms of accessibility, safety/security, service, sustainability, and capacity.

The main problems or key issues identified with respect to the Italian road network are list in the following table. In the columns it is possible to know the relationships between each theme and the type of impact.

Table 62 Italy: Identified Key Issues by type of impact.

COUNTRY	KEY ISSUE	ACCESSIBILITY	SAFETY/SECURITY	SERVICE	SUSTAINABILITY	CAPACITY
ITALY	Electric power stations still limited in number and concentrate along the motorway network and in northern Italy.					

1.10 Summary of the key issues identified on the road transport network in the EUSAIR region.

This paragraph presents in very short terms the most relevant issues highlighted by the analysis carried out on the EUSAIR road network by type of impact. It must be considered that some intervention may cause more than one a single impact on, for instance, accessibility of safety and security, therefore the table below shows the most relevant impact the identified key issues may produce.

Table 63 Identified Key Issues by type of impact.

COUNTRY	KEY ISSUE	ACCESSIBILITY	SAFETY/SECURITY	SERVICE	SUSTAINABILITY	CAPACITY
ALBANIA	Maximum speed on Motorways is 110km/h					
	Missing road connections to rural areas					
	Lack of capacity in sections candidate to become part of the TEN-T extension					
	Traffic congestion around urban area due to missing road bypasses					
	Some border checkpoint located in local roads					
	Very limited ITS deployment					
	Maximum speed on Motorways is 110km/h					
BOSNIA AND HERZEGOVINA	Very limited extension of the Motorway network					
	Maximum speed on motorway 100-120km/h					
	Lack of capacity in sections candidate to become part of the TEN-T extension					
	Reduction in the number carried by public transport services					
	High (and increasing) motorisation rate					
	No reduction in road accidents over the years					
	Very limiter ITS deployment					
	No legal framework for developing alternative fuel station network					
MONTENEGRO	No operating Motorway network					
	Speed on road network is limited to a maximum of 80km/h (50km/h on regional roads)					
	Very limited capacity of Primary roads and low level of performance on the network at all					
	Long travel time due to the poor condition of the network					
	Lack of capacity in sections candidate to become part of the TEN-T extension					
	Crossing borders during summer (holiday) causes delays and lack of capacity and affect local tourism					
	Increasing number of accidents and people injured					
	Very limiter ITS deployment					

COUNTRY	KEY ISSUE	ACCESSIBILITY	SAFETY/SECURITY	SERVICE	SUSTAINABILITY	CAPACITY
SERBIA	Obsolete road sections (roads made of gravel or earth) for about 2/5 of the network					
	Very limited extension of the Motorway network					
	Lack of capacity in sections candidate to become part of the TEN-T extension					
	Very limiter ITS deployment					
CROATIA	Lack of capacity of network serving urban areas					
	Road network suffers the seasonal peak of traffic					
SLOVENIA	Very limited extension of the Motorway network and Expressways					
	Ljubljana's surrounding road network is often under congestion due to seasonal peak and the concentric characteristics of the network					
	Public road transport passenger (non-urban) has reduced					
	Lack of capacity in sections candidate to become part of the TEN-T extension					
	High motorization rate (top-10 EU countries)					
	Congestions at borders (IT) due to seasonal peak causes delays and reduces the performance of the network					
GREECE	Most of the borders are with non-EU countries (non-Schengen)					
NORTH MACEDONIA	Very limited extension of the Motorway network					
	Low performance of the Motorways (travel time)					
	Very limiter ITS deployment					
ITALY	Electric power stations still limited in number and concentrate along the motorway network and in northern Italy.					

2 Planned projects in the macro-Region

2.1 Introduction

The following chapter provides the extensive list of road infrastructural projects in the Adriatic-Ionian Macro Region. The projects have been identified through the review of existing and available transport plans and investment programs, including both national and international documents.

To provide the details of planned projects, investment plans and drafting the road transport sector programmatic framework, the following national transport plans, EU investment plans and strategies and other international financial institution investment plans have been investigated based on availability and included, whether available, for each member state of the EUSAIR region:

- Connecting Europe Facility (CEF) Transport projects funding by EU
- The National Recovery and Resilience Plan (NRRP)
- Trans-European Transport Network (TEN-T)
- Development of indicative TEN-T extensions of the Comprehensive and Core Network in Western Balkans
- The National Transport Plan
- The National Road Transport Strategy
- The international financial investment plans (World Bank, EU Investment Bank, etc.)

The following volume therefore analyses the main planning document on a national scale, making a summary of the projects for EU countries, while for non-EU countries a specific focus is made on the strategic plan drafted by the Transport Community. This insight concerns Western Balkans Countries (Albania, Bosnia and Herzegovina, Montenegro, Serbia and North Macedonia), for which in addition to the national strategic plans, will also be verified the main measures and objectives included in the strategic work plan “Five-year Rolling Work Plan for Development of the Indicative TEN-T Extension of the Comprehensive and Core Network in Western Balkans”.¹⁷

Following paragraphs present tables including road infrastructural projects identified in each Country and characterized by type of project, main goal of the intervention and the belonging scenario. Type of project includes new construction or rather upgrade of existing infrastructures. Belonging scenario is divided into two categories: baseline or project scenario. Baseline scenario includes those interventions planned and financed, under construction or completed by 2030 and the Project scenario, describes interventions which are included in a plan/program/strategy but not entirely financed (for some of the projects, partial investment is already in place but not the whole required amount to complete the investment, therefore these have been considered as part of Project Scenario).

¹⁷ “Five-year Rolling Work Plan for Development of the Indicative TEN-T Extension of the Comprehensive and Core Network in Western Balkans”, Permanent Secretariat of Transport Community, April 2022

2.2 Albania

2.2.1 National Transport Strategy and Action Plan

The Government of Albania adopted the “Sectorial Strategy of Transport (SST) and Action Plan 2016- 2020”¹⁸ through the Decision of the Council of Ministers, No. 811, dated 16th of November 2016, “For the approval of the Transport Strategy and Action Plan 2016-2020”.

National Strategy is focused on reaching an efficient transport system, integrated in the region and in the EU network, with the purpose to promote economic development and upgrade life quality. The overall objective of the Sectorial Strategy of Transport and Action Plan 2016-2020 is to develop national transport system by improving its sustainability, interconnectivity, interoperability, and integration with the international and European transport system.

The main challenges in the road sector for the 2016-2020 planning period are:

1. Harmonize national legislation on the transport of goods and passengers by road with EU directives,
2. Complete the construction of the national road network, including strategic arteries,
3. Complete the feasibility study for the Adriatic-Ionian Highway North-South,
4. Reform the intercity passenger road transport network,
5. Improve Albania's road safety performance (maintenance of road transport infrastructure according to EU technical standards, regulation of road safety inspections, deployment of ITS systems).

The development and modernization of Albania’s transport infrastructure is one of the top priorities of the Government of Albania. The Minister of Infrastructure and Energy has focused its work on the acceleration and the integration of Albania’s transport system and the establishment of an integrated market comprised of transport infrastructure by land (road and rail), by sea and by inland waterways and in air transport.

2.2.2 Proposed objectives and measures

The strategy identified 43 Policies (Priority Actions) for the 5-year period which are deeply interlinked and strike a balance between soft measures and investments. Each priority action is detailed in specific tasks required for its attainment. Priority Action are divided into six reference sectors. The first of these considers the transport sector as a whole and identify two Transversal Priority Actions, other sectors covered are road, rail, maritime, air and intermodal and combined transport.

Focusing on the road transport, following table decline Priority Actions set in the Strategy.

Table 64 Albania Priority Actions for Road Transport [Source: Sectorial Strategy of Transport and Action Plan 2016-2020]

ID	Description
1	<i>Implement the roadmap for transport legislation alignment defined by the EU-funded Technical Assistance EuropeAid/134513/C/SER/AL, based on PKIE 2016-2020</i>
2	<i>Adopt Public Financial Management (PFM) and contract management practices at ARA, increase staff assigned to the MoTI and its subordinated structures in charge of road transport, and in addition undertake new training and capacity-building programs</i>

¹⁸

https://www.infrastruktura.gov.al/wp-content/uploads/2020/07/3rd-Monitoring-Report-of-Sectorial-Transport-Strategy-and-Action-Plan-2016-2020_June-2020.pdf

ID	Description
3	Complete ongoing construction projects and implement a structured pipeline of road projects over the period 2016-2020, in line with the SSPP for transport
4	Implement a Road Maintenance & Black Spot Elimination Plan and a detailed roadmap updating planning processes, standards in design and construction, operation and maintenance practices, and works supervision
5	Establish joint road BCPs following the principle of "single window" applied to the Muriqan – Sukobin BCP
6	Build dedicated parking infrastructure in BCPs in order to speed up border crossing procedures for trucks and buses
7	Prepare a Convention between the SEETO participants and the EU member states/the EU with respect to harmonized axle load taxation in order to avoid discrimination (completed)
8	Promote the establishment of road haulers' cooperatives and unions, and in addition taxation incentives for modernizing the freight and passenger vehicle fleet
9	Increase the frequency of vehicle road checks, and in addition toughen the license issuing procedure for road transport operators
10	Create a Road Transport National Innovation Program, in cooperation with academic institutions and private businesses

Task planned in the Strategy are constantly monitored thanks to information gathered from different institutions which are involved in the implementation of the Action Plan, with the aim to measure progress achieved.

3rd Monitoring Report of the Strategy covers the progress achieved during 2019, the following tables provide information regarding the Status of ten Priority Actions regarding the road transport sector:

Table 65 Albania Status of Priority Actions for Road Transport. [Source: Sectorial Strategy of Transport and Action Plan 2016-2020]

Strategic Priority 1	Create the adequate legal and governance conditions for an efficient transport system	
Goal 1.1	Expected Result	
Finalise the alignment of the Albanian transport legislation to the EU <i>acquis</i>	A national transport legislation body sustaining the achievement of a highly developed transport sector	
Priority Action ROAD 1	Specific tasks	
Implement the roadmap for transport legislation alignment defined by the EU-funded Technical Assistance EuropeAid/134513/C/SER/AL, based on PKIE 2016-2020	Operational, regulatory & licensing <ul style="list-style-type: none"> 2016 – 2017: Proceed with further approximation of the Albanian legislation to the <i>acquis communautaire</i>, according to the short and medium-term actions described in the EU-funded Technical Assistance report called "Draft road map for alignment of legislation" (EuropeAid/134513/C/SER/AL). 	Completed
	<ul style="list-style-type: none"> 2018 – 2020: Proceed with further approximation of the Albanian legislation to the <i>acquis communautaire</i>, according to the long-term actions described in the EU-funded Technical Assistance report called "Draft road map for alignment of legislation" (EuropeAid/134513/C/SER/AL). <p>Note: It is highly recommended to prioritise the approximation of every piece of legislation connected to road safety and road security.</p>	In progress There is foreseen further approximation on road safety in PNIE 2021-2023.



Strategic Priority 1	Create the adequate legal and governance conditions for an efficient transport system	
Goal 1.2	Expected Result	
Ameliorate the existing governance structure	The operation of efficient public structures supporting the deployment of the transport strategy defined by the Government of Albania.	
Priority Action ROAD 2	Specific tasks	
<p>Adopt PFM and contract management practices at ARA and increase number of staff assigned to the MoTI and its subordinated structures in charge of road transport, and in addition undertake new training and capacity-building programmes</p>	<p>Institutional & organizational</p> <p>i) 2016 – 2020: Follow recommendations from the arrears clearance audit for ARA, the main ones being:</p> <p>ii) <u>Procurement process</u>: ensure that, in all instances, the minutes for procurement procedures (evaluation minutes) are signed by all members of the procurement committee, and, that all members of the evaluation committee sign a declaration of independence and impartiality;</p> <p>iii) Contract management and use of contingencies: amendments to a contract must be signed before the expiration date of the initial contract and by all relevant parties; all invoices should be signed by the contracting authority; the designer should be included and retain responsibility until the completion of the execution of the project; the reporting on the reserve fund should be separated from the reporting on the use of the rest of the budget of the works contract; and, the contracting authority to ensure that all pages of a works contract are signed by all parties;</p> <p>iv) Monitoring and work contracts: The supervisor should provide to ARA interim work progress reports, together with quality reports of materials used; and, all interim work progress reports should also be signed by the topographer and the supervisor;</p> <p>v) Allocations of engineers to project: ARA should implement a clear delegation of projects to each of its engineers;</p> <p>vi) Final Handover Protocol for completed contracts: The Handover Committee is to make sure that, in all instances, the final measurements, such as, the layer thickness and carrying capacity for the completed project are always documented and to make sure the necessary comparisons and quality evaluations as required by the contract are made;</p> <p>vii) Government Financial Information System (FIS): to be used by all Budgetary Institutions to capture their invoices and solve potential unknown and unreliable arrears record; to be integrated with the Public Procurement Agency System to provide a strong control over contractual commitments made by Budgetary Institutions;</p>	Completed
	- 2017 : Increase the budget line allocated to the staff assigned to the MoTI and its subordinated structures in charge of road transport, with a special focus on the General Directorate of Road Transport Services (GDRTS) and the Albanian Road Authority (ARA).	Completed
	- 2017 : Undertake the following 2-day capacity-building programmes: "Effective Asset Management & Performance-Based Maintenance Contracts", "Road Infrastructure Safety Management: Training for Road Safety Auditors and Inspectors", and "Access to the road transport operator profession in the framework of the EU"	Completed
	- 2018 : Undertake the following 2-day capacity-building programmes: "Safety issues in road transport in the framework of the EU", "Social issues in road transport in the framework of the EU", "Pavement Construction and Maintenance".	Completed
	- 2018 : Undertake the following 2-day capacity-building programmes: "Vehicle issues in road transport in the framework of the EU", "Driving licences and safety issues in road transport in the framework of the EU", and "Access to the road transport market in the framework of EU".	Completed
	- 2019 : Undertake the following 2-day capacity-building programmes: "Road infrastructure charging and taxation issues in road transport in the framework of the EU", "Sustainable Roads", and "Intelligent Transport Systems for Road Transport".	Completed
	- 2020 : Undertake a 2-day capacity-building programme on "Public-Private Partnerships".	completed



EU Strategy for the
Adriatic and Ionian Region
EUSAIR

Strategic Priority 2	Complete and modernise Albania's primary and secondary road network	
Goal 2.1	Expected Result	
Complete the "missing links" and upgrade the standards of the existing road infrastructures	A comprehensive road network in alignment with SEETO commitments and securing the connectivity of the primary and secondary network	
Priority Action ROAD 3	Specific tasks	
Complete ongoing construction projects and implement a structured pipeline of road projects over the period 2016-2020, in line with the SSPP for transport	Planning & investment - 2016 : Payment of the created debts of ARA from 2013 until Q1 2016, according to the information provided by MoTI-ARA, dealing with Road Constructions and Repairing/Paving, Supervising, Studies and Designs, Court Decisions, VAT and Local Costs.	Completed
	- 2016 – 2020 : Complete the ongoing construction projects according to the information provided by MoTI-ARA, namely:	In progress
	1. 2016 : Construction of Tirana-Elbasan road	Completed
	2. 2016–2017 : Construction of Plepa-Kavaje-Rrogzhina by-pass	Completed
	3. 2016 – 2018 : Construction of Tirana Ring (South-west Section	In progress
	4. 2016 – 2018 : Reconstruction of Elbasan-Banje segment	Completed
	5. 2016 – 2019 : Construction of Fieri by-pass	Completed
	6. 2016 – 2019 : Construction of Qukes-Qaf Ploce road	In progress
	7. 2016 – 2019 : Reconstruction of Qafe Thane-Lin-Pogradec segment	Completed
	8. 2016 – 2019 : Construction of Vlora by-pass	In progress
	9. 2016 – 2019 : Reconstruction & Repairing/Paving (total others)	completed
	10. 2017 – 2018 : Construction of Tirana Ring (Northeast Section K.Sauk-Bregu Lumit)	In progress
	11. 2017 – 2019 : Reconstruction of the road Korça-Erseka-Ieskovic	In progress
	12. 2018 – 2020 : Construction of Shkodra by-pass	In progress
	- 2016 – 2020 : Implement the SSPP for transport (road mode) and other projects included in the TEN-T Core Network:	In progress
	1. 2016 – 2020 : Reconstruction of the Vlora River Road	In progress
	2. 2017 – 2019 : Construction of Skrapar-Permet road	Completed
	3. 2017 – 2020 : Construction of the segment Fushe Kruja - Thumana (doubling) road	Not started
	4. 2017 – 2020 : Construction of the Thumana – Kashar / Vora road	Not started
	5. 2017 – 2020 : Construction of Elbasan By-pass	In progress
	6. 2017 – 2020 : Construction of Tepelena By-pass	Completed
	7. 2018 – 2020 : Construction of Lezha by-pass	Not started- included in the AIC
	8. 2018 – 2020 : Completion of bridge and tunnel Morine-Kukes	Completed
	9. 2018 – 2020 : Construction of Milot-Rreshen (doubling) road	Not started
	- 2016 – 2020 : Do the preparation of the SSPP for transport projects (only Feasibility, Preliminary Design and Detailed Design Studies):	Completed
	1. 2016 – 2019 : Feasibility Study of the Adriatic-Ionian Highway	
	2. 2018 – 2020 : Detailed design for the construction of the Arbri Road section.	
	- 2016 – 2020 : Prepare an annual report monitoring the increase in AADT (annual average daily traffic) in the road sections with a high potential for tolling identified by the Albanian Road Tolling Strategy (ARTS).	In progress



Strategic Priority 2	Complete and modernise Albania's primary and secondary road network	
Goal 2.2	Expected Result	
Secure a good maintenance of the existing road infrastructures and a good governance structure across the whole life cycle of a road infrastructure project	Operation and maintenance of a national road network satisfying the mobility needs of Albania in a safe, sustainable and competitive manner	
Priority Action ROAD 4	Specific tasks	
Implement a Road Maintenance & Black Spot Elimination Plan and a detailed roadmap updating planning processes, standards in design and construction, operation and maintenance practices, and works supervision	Planning & investment	
	- 2016 – 2020 : Implement a National Road Maintenance & Black Spot Elimination Plan aligned with the current National Road Safety Strategy and aiming at decreasing i) the number of fatalities by 30%, and ii) the number of black spots from 240 to 185 in 2020. The Plan will comprise two main pillars of action: i) The Results-Based Road Maintenance and Safety Project (RRMSP) funded by the WB's International Bank for Reconstruction and Development (IBRD). The Highway Development and Management Model (HDM-4) will be used to optimize the work programme of preservation works for the Project's budget scenario and network coverage. ii) An additional road maintenance programme to preserve the average network roughness of at least 25% of the national road network not covered by the RRMSP Programme at the same level as in 2014 for P and P5 roads (4.5 IRI, m/km), co-financed by the IPA budget (high-priority investment as per the Vienna Western Balkans Summit). The objective is to gradually increase the current expenditure of EUR 3,000 per km to EUR 11,000 per year by 2020 (re-balance spending from capital investments toward maintenance and rehabilitation, in order to preserve past road investments).	In progress
	- 2016 – 2020 : Implement a minimum of 2 new road-based ITS projects optimizing the use and safety conditions of the existing road network, in alignment with the Multimodal National ITS Strategy to be developed under Priority Action INTERMODAL 4.	completed
	- 2016 : Alignment of road operation and maintenance practices with the recommendations of the Results-Based Road Maintenance and Safety Project (RRMSP) funded by the WB's International Bank for Reconstruction and Development (IBRD). In particular, the alignment should include i) the adoption of Road Safety Audits & Inspections practices, including adoption of guidelines and curriculum and delivery of trainings, and ii) a detailed roadmap for black spot elimination.	Completed
	- 2016 : Review the functional classification of the road network and reclassify roads in line with their functional requirements and the jurisdiction responsible for their preservation.	Completed
	- 2016 : Undertake a 3-day capacity-building programme on the "Road Construction and Maintenance Standards" Manuals recently adopted (August 2015) by the ARA, to secure their widespread outreach amongst MoTI and ARA staff.	Completed
	- 2017 : Set up – and update regularly - a GIS-based road asset management system as a basis for a more efficient and professional management of national road assets.	Completed
	- 2017 – 2020 : Promote and generalize the use of output and performance – based concessions (PPPs) for road operations and maintenance, not only for the national network (RRMSP programme) but also for the regional and local networks.	In progress Under ongoing RRMSP WB Project
	- 2017 – 2020 : Undertake a twinning with other Road Authorities of the EU countries (including Technical Assistance) and ensure the supply of equipment for ARA road works quality laboratory through indirect management with the Central Finance and Contracting Unit (CFCU) within the Ministry of Finance of Albania. (both actions financed by IPA II Programme)	In progress
	- 2018 : Study – via an international consultant - the possibility of earmarking a defined percentage of road user charges to the operations and maintenance of the road network (recommendation not aligned with the WB recommendation).	In progress
- 2018 : Undertake a new edition of the 3-day capacity-building programme on the "Road Construction and Maintenance Standards" Manuals recently adopted (August 2015) by the ARA, to secure their widespread outreach amongst MoTI and ARA staff.	Not started	



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Strategic Priority 3	Strengthen the regional cooperation via road connections	
Goal 2.1	Expected Result	
Reduce border crossing times and procedures	Improvement of connectivity, safety and security on Border Crossing Points (BCPs) Increasing the average annual volume of goods with Kosovo, NM(ex NM),,,) Greece and Montenegro by 10% and that of passengers by about 15% by 2020	Representatives of Montenegro and the Republic of Albania to consider the draft of ConnectA bilateral agreement in order to assess whether this agreement would be a good basis for further cooperation of the two sides and the signing of a framework agreement;
Priority Action ROAD 5	Specific tasks	
Establish joint road BCPs following the principle of "single window" applied to the Muriqan – Sukobin BCP	Operational, regulatory & licensing – 2016: Open a dialogue with the Montenegro, Kosovo, NM and Greece authorities (bilaterally or in the framework of SEETO) to propose 'joint' road BCPs where police and custom control can be performed as a "single window" (one stopping) based on already established agreements and protocols on the Muriqan-Sukobin BCP between Albania and Montenegro.	Completed
	– 2016: Open a dialogue with the Montenegro, Kosovo, NM and Greece authorities (bilaterally or in the framework of SEETO) to review the possibility of division of labor between geographically close road BCPs in order to reduce queuing and procedure times at the borders based on the Presevo-Tabnovce BCP between Serbia and NM.	Completed
	– 2017: Draft an action plan for the implementation of the "single window" principle to Albanian road BCPs, including recommendations to enhance the implementation of the TIR agreement, overcoming custom brokers imposing a double guarantee to Albanian truck operators.	Completed
	– 2018 – 2020: Implement the "single window" principle (border control is jointly performed by officials of both countries in one location, carrying out all procedures related to border control at the same time, including passport, customs, veterinary and phytosanitary control) to all existing and planned road BCP, at a progress rate of two BCPs per year: <i>Albania - Montenegro</i> Existing BCPs: (i) Muriqan (Shkodra, AL) - Sukobin (Ulcinj, MNE), (ii) Hani Hotit (Malesi Madhe, AL) - Bozaj (Podgorica, MNE) – The main BCP, (iii) Bashkim (Malesi Madhe, AL) - Gusinje (Plav, MNE). Previously-planned BCPs: (iv) Zogaj (Shkodra, AL) - Ckla (Bar, MNE), (v) Grabom (Malesi Madhe, AL) - Cijevna (Podgorica, MNE), (vi) Qafe Vranica (Tropoja, AL) - Plav (MNE). <i>Albania - Kosovo:</i> (i) Qafe Morine (Tropoja, AL) - Gjakova (Kosovo), (ii) Qafe Prush (Has, AL) - Gjakova (Kosovo), (iii) Morine (Kukes, AL) - Vernica (Prizren, Kosovo) – The main BCP, (iv) Orgjost (Kukes, AL) - Orgusha (pedestrian only, Kosovo), (v) Shishtavec (Kukes, AL) - Dragash (opened on 10 May 2013, Kosovo) <i>Albania –North Macedonia (NM)</i> (i) Bllata (Dibra, AL) - Spas (Debar, NM), (ii) Qafe Thana (Pogradec, AL) - Kafasan (Struga, NM) – The main BCP, (iii) Tushemisht (Pogradec, AL) - Sveti Naum (Ohrid, NM), (iv) Gorica (Pustec, AL)- Stenje (Resen, NM). <i>Albania – Greece</i> (i) Kapstica (Devoll, Korça, AL) - Krystallopigi (Prespes, Greece) – Very relevant BCP, (ii) Tre Urat (Permet, AL) - Melissopetra (Konitsa, Greece), (iii) Sopic (Dropull, AL) - Drymades (Pogoni, pedestrian only, Greece), (iv) Kakvija (AL) - Ktismata (Pogoni, Greece) – The main BCP, (v) Rips (Finiq, AL) - Sagiada (Filiates, Greece).	In progress



Strategic Priority 3	Strengthen the regional cooperation via road connections	
Goal 3.1	Expected Result	
Reduce border crossing times and procedures	Improvement of connectivity, safety and security on Border Crossing Points (BCPs) Increasing the average annual volume of goods with Kosovo, NM, Greece and Montenegro by 10% and that of passengers by about 15% by 2020	The dialogues are open with neighbor countries and the process is ongoing;
Priority Action ROAD 6	Specific tasks	
Build dedicated parking infrastructure in BCPs in order to speed up border crossing procedures for trucks and buses	Planning & investment	
	- 2017: Open a dialogue with the Montenegro, Kosovo, NM and Greece authorities (bilaterally or in the framework of SEETO) to propose the 'joint' development of new parking space for trucks and buses to avoid blocking the highway in the main road BCPs.	In progress
	- 2017: Draft a Feasibility Study and a Design Project for building new parking space in at least the main road BCPs: Hani Hotit (Malesi Madhe, AL) - Bozaj (Podgorica, MNE) Morine (Kukes, AL) - Vernica (Prizren, Kosovo) Qafe Thana (Pogradec, AL) – Kafasan (Struga, NM) Kakvija (AL) – Ktismata (Pogoni, Greece)	Completed
	- 2018-2020: Build the parking space infrastructure.	Completed
Strategic Priority 3	Strengthen the regional cooperation via road connections	
Goal 3.2	Expected Result	
Avoid the discrimination exerted to Albanian road transport operators	Harmonised or, at least, non-discriminatory axle load taxes between all SEETO countries (including Albania) and the EU member states	This issues does not exist. The axle load taxes that we apply in our country are almost the same as those in Italy and other EU countries
Priority Action ROAD 7	Specific tasks	
Prepare a Convention between the SEETO participants and the EU member states/the EU with respect to harmonised axle load taxation in order to avoid discrimination	Pricing, taxation & subsidies	
	- 2017: Promote a Convention between the SEETO participants and the EU member states/the EU with respect to harmonised axle load taxation in order to avoid discrimination.	Completed
Strategic Priority 4	Ensure the functioning of the road transport market in line with EU standards	
Goal 4.1	Expected Result	
Completion of an efficient operational and institutional framework for road freight and passenger transport	The provision of efficient road transport services to Albania's citizens and businesses	
Priority Action ROAD 8	Specific tasks	
Promote the establishment of road hauliers' cooperatives and unions, and in addition taxation incentives for modernising the freight and passenger vehicle fleet	Pricing, taxation & subsidies	
	- 2018: Develop a joint dialogue with ANALTIR in order to promote the establishment of road operators' cooperatives and unions creating economies of scale in the sector and overcoming the current sector atomisation.	Completed
	- 2019: Launch taxation incentives for (i) the setting-up of road operators' cooperatives and unions, and for (ii) acquiring new-generation road transport vehicles (i.e. through the reduction/exemption of vehicle registration and/or vehicle circulation taxes).	In progress
Strategic Priority 4	Ensure the functioning of the road transport market in line with EU standards	
Goal 4.1	Expected Result	
Completion of an efficient operational and institutional framework for road freight and passenger transport	The provision of efficient road transport services to Albania's citizens and businesses	Regarding these services, continuing to work intensively

Priority Action ROAD 9	Specific tasks	
Increase the frequency of vehicle road checks, and in addition toughen the license issuing procedure for road transport operators	Operational, regulatory & licensing - 2016 – 2017: Increase the number of vehicle roadside checks by 25%, in order to secure the enforcement of vehicle legislation.	Completed
	- 2016 – 2017: Reinforce the enforcement of the national legislation related to the license issuing for road transport operators, in line with Directive 2003/59/EC (Legislation on initial qualification and periodic training of drivers engaged in road transport) and Regulation 1071/2009 (Legislation on access to the profession of road transport operator).	Completed
	- 2019: Increase the number of vehicle roadside checks by 50% in comparison to 2015 figures, in order to secure the enforcement of vehicle legislation.	Completed
Strategic Priority 4	Ensure the functioning of the road transport market in line with EU standards	
Goal 4.1	Expected Result	
Completion of an efficient operational and institutional framework for road freight and passenger transport	The provision of efficient road transport services to Albania's citizens and businesses	
Priority Action ROAD 10	Specific tasks	
Create a Road Transport National Innovation Programme, in cooperation with academic institutions and private businesses	Institutional & organisational - 2018: Mapping of relevant scientific and technological priorities for enhancing Albania's innovation capacity in the field of road transport. A stakeholder dialogue involving the Ministry of Education and Sports, Universities and private business actors should accompany the action.	Completed
	- 2019: Launch of a 2-year National Programme offering a mix of grants and loans to road innovation projects led by Albanian organisations.	In progress
	- 2020: Undertake a 3-day seminar to stimulate the involvement of Albanian organisations in transport-related Calls funded by the EC's R&D Framework Programme (Horizon 2020).	Not started

2.2.3 Overview of transport project in Albania based on “Five-year Rolling Work Plan for Development of the Indicative TEN-T Extension of the Comprehensive and Core Network in Western Balkans”¹⁹

This work plan is a Strategic document which represents an important basis for a “common, more focused approach to regional connectivity” for the implementation of the Transport Community Treaty.

The main purpose is to ensure coordinated development of the TEN-T in the region and achieve transition to a cohesive network, while all regional partners are pursuing their own connectivity goals.

The document provides an overview of the state of play in development of the indicative extension of the TEN-T network, in term of compliance with TEN-T Standards, to the Western Balkans. The status shown is based on data from the Annual Report on the Development of the TEN-T network of the Regional Steering Committee.

¹⁹ “Five-year Rolling Work Plan for Development of the Indicative TEN-T Extension of the Comprehensive and Core Network in Western Balkans”, Permanent Secretariat of Transport Community, April 2022

Another document's section includes an overview of TEN-T development plans in the region by analysing regional plan, the top priorities for the region in terms of TEN-T network development, a list of concrete actions for Regional Partners to focus on over the next few years.

Finally, The Transport Community Permanent Secretariat has developed a Sustainable and Smart Mobility Strategy for the Western Balkans together with a corresponding GAP analysis. The purpose is also providing a roadmap for digitalisation and decarbonisation of the region's transport sector.

The main objectives identified for the region are summarized below.

Key objectives:

- Enhancing connectivity within the Western Balkans and with the European Union.
- Improving accessibility and mobility on the TEN-T Network.
- Building the transport of the future towards a smart, sustainable, green, safe and resilient TEN-T network.
- EU acquis implementation and associated policy reforms.

As per the provisions of Regulation no. 1315/2013, TEN-T comprises a dual-layer structure consisting of the Comprehensive and Core Networks, the latter consisting of prioritized sections of the Comprehensive Network. The total length of the TEN-T road network in the Western Balkans is 5,287.41 km, of which 3,540.55 km are on the Core Network. The TEN-T road network is deemed to include high-quality roads (motorways, expressways, or conventional strategic roads) specially designed and built for motor traffic with adequate levels of safety. Based on the findings of the TCT Secretariat's Annual Report on Development of the indicative TEN-T extension of Core and Comprehensive Network to the Western Balkans, 45% of Core Network and 52% of Comprehensive network are compliant with TEN-T standards related to infrastructure profile and condition.

2.2.4 Priority projects maturity in Albania

Focusing on road action plan yearly progress 2020-2021, Albania has achieved 50 percent of the goals set with respect to establishing a functioning and efficient road maintenance system, 44 percent of goals set in ITS deployment and 25 percent of goals set with respect to enhancing of road transport climate resilience and use of alternative fuels.

Following tables, extracted from the strategic document, describe the maturity of Albanian priority projects in road transportation sector. In Table 66, are represented mature projects, each project is declined from belonging to a transport corridor and to the TEN-T Network and a short description. Finally, are described the cost and the time horizon within which conclusion is expected.

Table 66 Road Transport Project Based on TEN-T Extension of the Comprehensive and Core Network in Western Balkans - Mature priority projects.

Corridor / Route / Node	TEN-T Network	Regional Partner	Project Name	Project cost (M€)	Expected Completion
ECONOMIC AND INVESTMENT PLAN FOR WESTERN BALKANS					
FLAGSHIP 3 – CONNECTING THE COASTAL REGION					
Road projects (BLUE HIGHWAY)					
Route 2b	Core	ALB	Construction of Adriatic – Ionian Corridor (AIC) Section 1: Murriqan – Ballëren	295	2030
Route 2b	Core	ALB	AIC Section 2: Ballëren (starting from Lezha Bypass) – Milot	147	2028
Route 2b	Core	ALB	Construction of AIC Section 3: Milot – Thumane	35	2028
Route 2b/part Corridor VIII	Core	ALB	Construction of Adriatic – Ionian Section 4+5: Thumane – Kashar – Rrogozhinë	730	2028
Route 2c	Core	ALB	AIC Section 6+7: Konjat – Fier bypass	169	2030
Route 2c	Core	ALB	AIC Section 9A-2: Fier bypass (Levan) – Pocem	167	2040 ²²
Route 2c	Core	ALB	AIC Section 9B-2: Pocem – Memaliaj	623	2040
Route 2c	Core	ALB	AIC Section 10: Memaliaj – Subashi Bridge	271	2035
Route 2c	Core	ALB	AIC Section 11: Subashi Bridge – Gjirokaster bypass	68	2040
Route 2c	Core	ALB	AIC Section 13A: Gjirokaster – Kakavijë	144	2028

Table 67 represents non-mature or under preparation priority projects. For each project, the inherent Transport Corridor or the TEN-T Network is indicated, along with a brief description and the expected cost in millions of Euros.

Table 67 Road Transport Project Based on TEN-T Extension of the Comprehensive and Core Network in Western Balkans - Mature priority under preparation.

Corridor / Route / Node	TEN-T Network	Regional Partner	Project Name	Project cost (M€)
Road projects				
	Core	ALB	Widening of Tirane – Durrës Motorway	205
Corridor VIII	Core	ALB	Rehabilitation of Corridor VIII, connection with Northern Macedonia. Section Elbasan – Qafë Thane	935
Route 2C	Core	ALB	Construction of Gjirokastra By-Pass	7

2.2.5 Summary of Road Transport Projects

Considering the analysis of the current transport system (the analysis carried out in the first paragraph), the main existing strategic documents for the area in terms of infrastructure and mobility development and the results of the analysis of existing National and international Strategic Plans presented in the previous paragraph of the volume, are now defined the most relevant road projects classified with respect to the state of progress and the main objective. Following list of selected interventions also constitutes a geographical database.

The table below includes the road infrastructural projects identified in the country and characterized by type of project (upgrade or new construction), main goal of the intervention and the belonging scenario (baseline 2030/2040, or project). The Baseline scenario has been defined by selecting the main ongoing and planned projects in the Region with a national/regional relevance, and very mature projects whose implementation is already planned and financed. Project scenario describes interventions which are included in a plan/program/strategy but still not financed or not entirely financed.

Table 68 Road projects in Albania

ID	Scenario	Object	Name	Main goal
AL1	Baseline 2030	Upgrade	Rehabilitation and upgrading of the road between Fier and Tepelene	This project will contribute to enhanced road safety and reduced travel time in Southern Albania, as well as improved road access to business and leisure opportunities.
AL2	Baseline 2030	New construction	Construction of a new two-lane motorway between Levan and Vlorë	This project will contribute to enhanced road safety and reduced travel time in Southern Albania, as well as improved road access to business and leisure opportunities.
AL3	Baseline 2030	New construction	Construction of the Tepelene and Gjirokastr bypass	This project will contribute to enhanced road safety and reduced travel time in Southern Albania, as well as improved road access to business and leisure opportunities.
AL4	Baseline 2030	New construction	Construction of the Fier bypass	This project will contribute to enhanced road safety and reduced travel time in Southern Albania, as well as improved road access to business and leisure opportunities.
AL5	Baseline 2030	New construction	Construction of Tirana Ring Road	The completion of the missing segments of the ring roads will increase road capacities
AL6	Baseline 2030	Upgrade	Widening of Tirana - Durres motorway	Upgrade of Tirana's infrastructure grid to meet traffic demands and to minimize the gap between the traffic flow and capacity of the existing street infrastructure
AL7	Baseline 2030	Upgrade	Reconstruction of Tirana-Durres Road on the direction Tirana-Ndroq -Plepa	Upgrade of Tirana – Durres Road, planned as a free-to-use alternative to the highway Tirana-Durres
AL8	Baseline 2030	New construction	Construction of Arbri Road: section Tirana-Peshkopi	Adriatic–Ionian Highway Upgrade: construction of Arbri Road
AL9	Baseline 2030	New construction	Construction of Vlorë bypass	Corridor VIII: construction of Vlorë bypass in the southeast of Albania. It will cover the coastal road from Vlorë towards the south of Albania, through the coastal villages, down to Saranda.
AL10	Baseline 2030	New construction	Construction of Vlorë River road: section Vlorë-Qeparo	This project will contribute to enhanced road safety and reduced travel time in Southern Albania, as well as improved road access to business and leisure opportunities.

ID	Scenario	Object	Name	Main goal
AL11	Baseline 2030	New construction	Construction of Kardhiq-Delvina Road	This project will contribute to enhanced road safety and reduced travel time in Southern Albania, as well as improved road access to business and leisure opportunities.
AL12	Baseline 2030	New construction	Reconstruction and upgrade of the Road Erseke - Leskovik in Korca region	The general objective is the improvement of the planimetric parameters of this road, the construction of the package of road layers, the realization of the necessary protection structures and road signalization according to the standards in force, the necessary engineering measures for the road stability, the construction of side channels of the road etc.
AL13	Baseline 2030	New construction	Construction of the Llogara tunnel in the road section Orikum-Himara	This project will contribute to enhanced road safety and reduced travel time in Southern Albania, as well as improved road access to business and leisure opportunities.
AL14	Baseline 2030	New construction	Construction of road Lezha bypass	Faster connection and more capacity along the coastal road, bypassing the Lezhe node
AL15	Baseline 2030	New construction	Construction of Tirana bypass	Upgrade of Tirana's infrastructure grid to meet traffic demands and to minimize the gap between the traffic flow and capacity of the existing street infrastructure
AL16	Baseline 2030	New construction	Construction of road Tirana - Elbasan	Upgrade of Tirana's infrastructure grid to meet traffic demands and to minimize the gap between the traffic flow and capacity of the existing street infrastructure
AL17	Baseline 2030	New construction	Construction of road Qukes Qafe - Plloce	Faster connection between the port of Durres and other Balkan countries, making Albania a more convenient place to carry out the transit of transport from the Balkan countries to Europe and viceversa. The road also serves as a bypass for the city of Pogradec, one of the tourist capitals of Southeast Albania, thus avoiding pollution of the city and the lake, because of the transit of heavy vehicles, leading to increased tourist comfort in this region by bringing increase the number of tourists.
AL18	Baseline 2030	New construction	Construction of road Milot - Thumane	Faster connection and more capacity along the coastal road.
AL19	Baseline 2030	Upgrade	Upgrade of road Thumane - Kashar	Upgrade of Tirana's infrastructure grid to meet traffic demands and to minimize the gap between the traffic flow and capacity of the existing street infrastructure
AL20	Baseline 2030	New construction	Construction of road Kashar - Peze Helmes	Upgrade of Tirana's infrastructure grid to meet traffic demands and to minimize the gap between the traffic flow and capacity of the existing street infrastructure

ID	Scenario	Object	Name	Main goal
AL21	Baseline 2030	New construction	Construction of road Peze Helmes - Luzi Vogel	Upgrade of Tirana's infrastructure grid to meet traffic demands and to minimize the gap between the traffic flow and capacity of the existing street infrastructure
AL22	Baseline 2030	Upgrade	Upgrade of road Luzi Vogel / Lekaj – I/C Rrogzhine	Faster connection and more capacity along the coastal road
AL23	Baseline 2030	Upgrade	Upgrade of road Rrogzhine - beginning of Fier Bypass	Faster connection and more capacity along the coastal road
AL24	Project	Upgrade	Doubling of road Milot -Rreshen	More capacity and safety on the section, along the Route 7 towards Kosovo* ²⁰
AL25	Baseline 2030	New construction	Construction of Shkodra bypass	Faster connection and more capacity along the coastal road
AL26	Project	Upgrade	Construction of Adriatic – Ionian Corridor (AIC) Section 1: Muriqan – Baldreni	Faster connection and more capacity along the coastal road
AL27	Project	Upgrade	AIC Section 2: Baldreni (starting from Lezha Bypass) – Milot	Faster connection and more capacity along the coastal road
AL28	Project	Upgrade	Construction of a 23.8 km -long highway between Gjirokaster and Kakavije on the Adriatic - Ionian Corridor	This project will contribute to enhanced road safety and reduced travel time in Southern Albania, as well as improved road access to business and leisure opportunities.
AL29	Project	Upgrade	Rehabilitation of Corridor VIII, connection with Northern Macedonia. Section Elbasan - Qafe Thane	Faster connection and more capacity on east-west axis

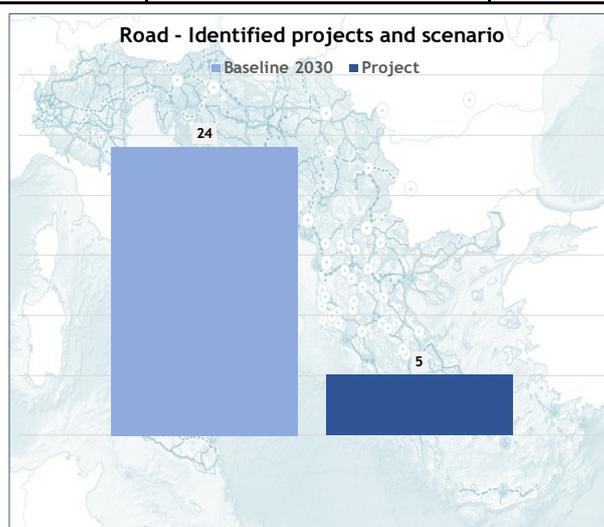


Figure 43 Road projects by scenario, in Albania

²⁰ *This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo* declaration of independence

29 road interventions selected in Albania are now represented in a map in which is possible to recognize functionally classified current road network (primary, secondary, tertiary) and road project classified by scenario.



Figure 44 – Map of road project by scenario in Albania

Below are smaller scale maps to help the reader locate the interventions IDs.

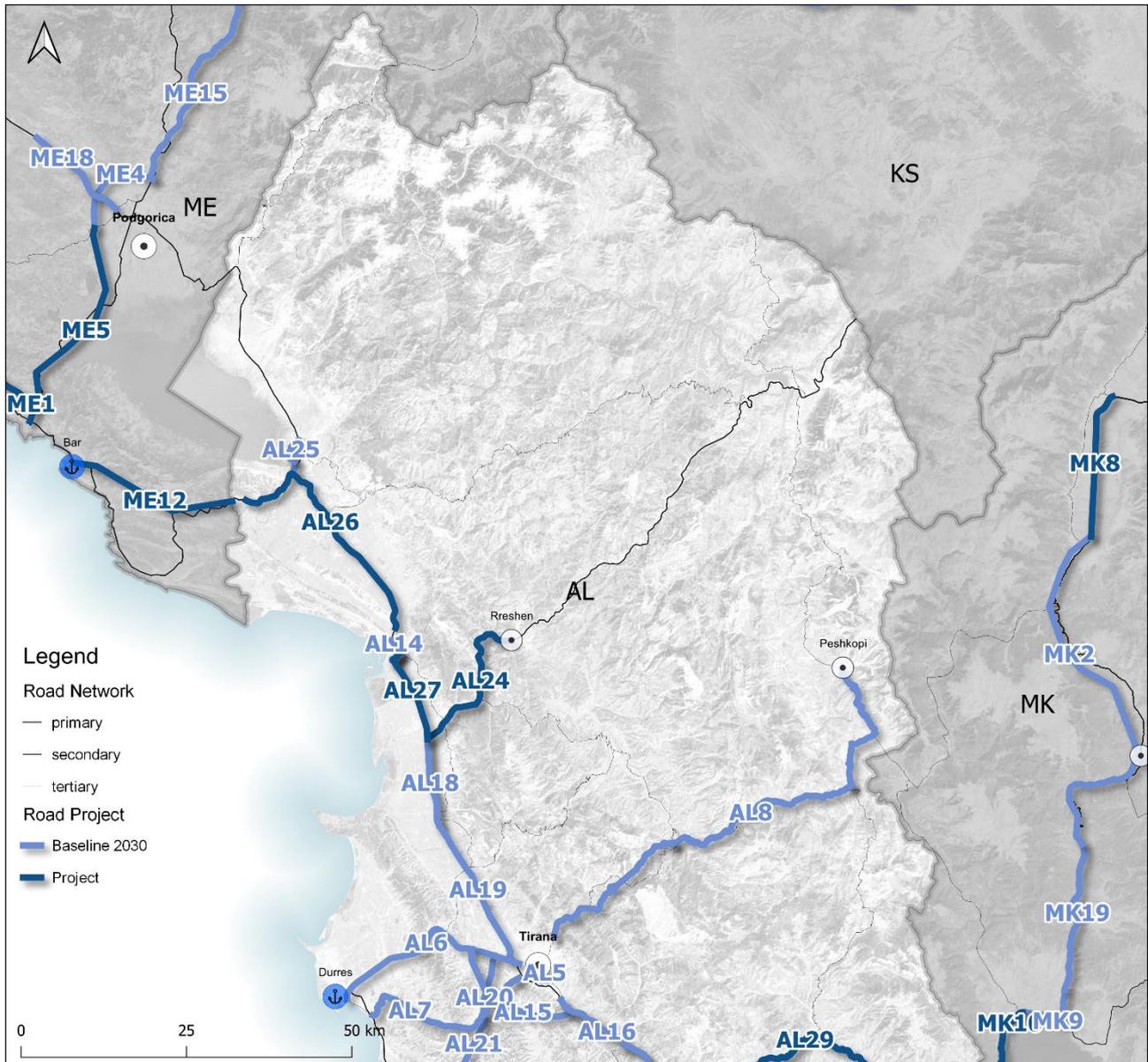


Figure 45 Map of road project by scenario in Albania – Northern area

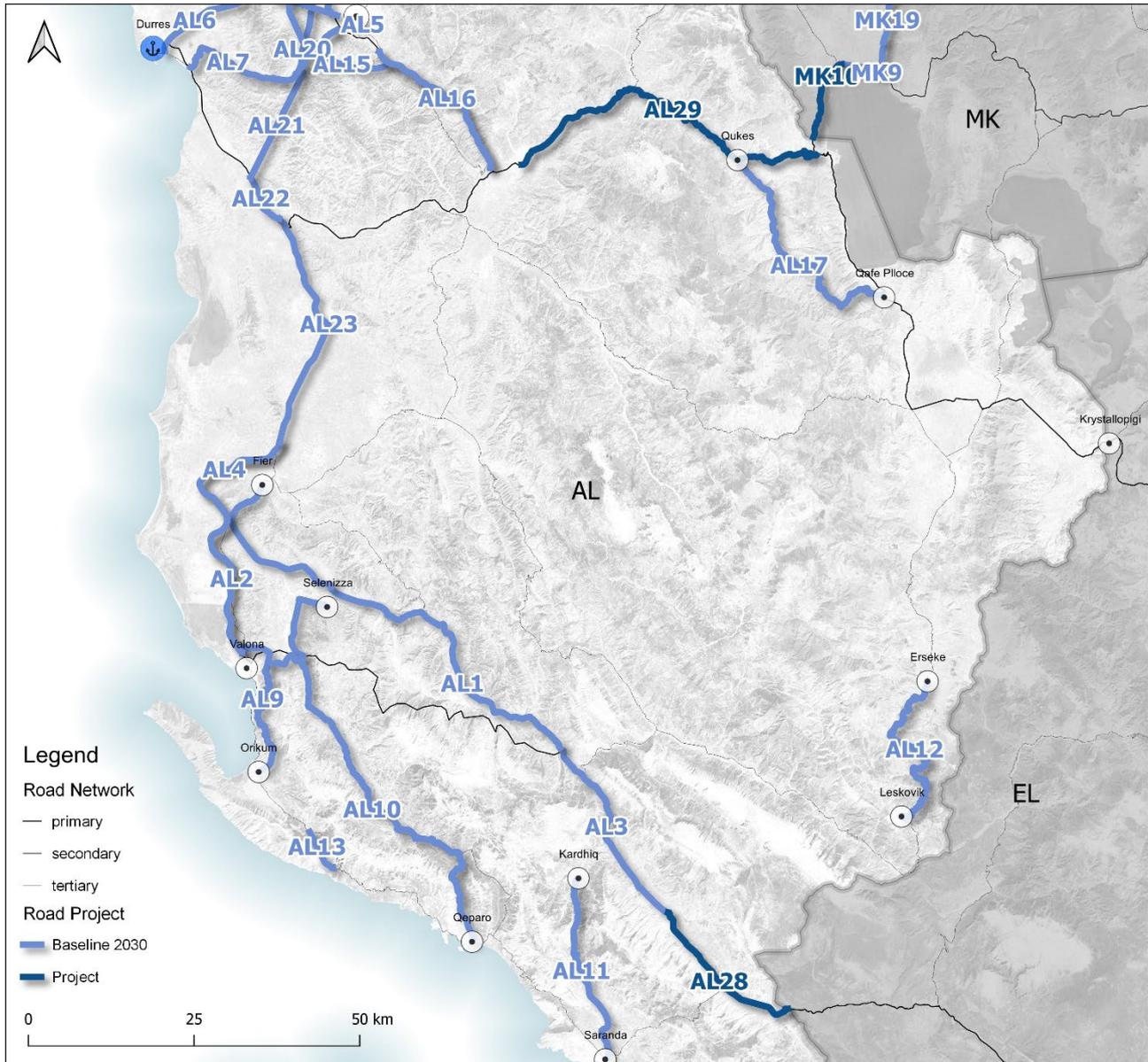


Figure 46 Map of road project by scenario in Albania – Southern area

2.3 Bosnia and Herzegovina

2.3.1 National Transport Strategy and Action Plan

Following the adoption of the Framework Transport Policy for BiH, Council of Ministers of BiH adopted in July “2016 Framework Transport Strategy (FTS) and Action Plan” (Official Gazette No.1/16).

The Transport Strategy is therefore defined in the Framework Transport Strategy (2016-2030) of Bosnia and Herzegovina (FTS), which considered two different “entities” (Bosnia and Herzegovina Federation and Srpska Republic). Each of these entities distinguishes “main goals” and “specific targets”.

The strategic planning of the transport sector can be defined as a tool at the service of major economic and social policy objectives. For each transport mode, the Framework Transport Strategy aims at defining the actions to be implemented to achieve the general and specific objectives in the short (2016-2020), medium (2021-2025) and long term (2026- 2030).

National transport strategy is oriented to the improvement and efficiency of the railroad system, trying to align its internal goals to European standards and regulations. The following are the most important elements of the Framework Transport Strategy:

1. Meet social and economic demands.
2. Satisfy the needs in terms of maintenance, improvement, and development of transport infrastructure.
3. Be financially sustainable.
4. Comply with EU standards and regulations.
5. Satisfy safety and information requirements.
6. Have a minimal permissible environmental impact.

Actions stemming from the Framework have been allocated to different time periods based on their maturity, budget restriction, etc. The following development categories can be defined:

- actions to be implemented primarily (in the short term).
- action to be implemented after proper preparation (in the medium term).
- actions with low level of maturity and/or constrains (in the long term).

For each action, the Framework Transport Strategy defines: the stakeholders responsible to implement the action and the instruments to be used to implement the action.

2.3.2 Overview of transport project in Bosnia and Herzegovina based on “Five-year Rolling Work Plan for Development of the Indicative TEN-T Extension of the Comprehensive and Core Network in Western Balkans”²¹

This work plan is a Strategic document which represents an important basis for a “common, more focused approach to regional connectivity” for the implementation of the Transport Community Treaty.

The main purpose is to ensure coordinated development of the TEN-T in the region and achieve transition to a cohesive network, while all regional partners are pursuing their own connectivity goals.

The document provides an overview of the state of play in development of the indicative extension of the TEN-T network, in term of compliance with TEN-T Standards, to the Western Balkans. The status shown is based on data from the Annual Report on the Development of the TEN-T network of the Regional Steering Committee.

²¹ “Five-year Rolling Work Plan for Development of the Indicative TEN-T Extension of the Comprehensive and Core Network in Western Balkans”, Permanent Secretariat of Transport Community, April 2022

Another document's section includes an overview of TEN-T development plans in the region by analysing regional plan, the top priorities for the region in terms of TEN-T network development, a list of concrete actions for Regional Partners to focus on over the next few years.

Finally, The Transport Community Permanent Secretariat has developed a Sustainable and Smart Mobility Strategy for the Western Balkans together with a corresponding GAP analysis. The purpose is also providing a roadmap for digitalisation and decarbonisation of the region's transport sector.

The main objectives identified for the region are summarized below.

Key objectives:

- Enhancing connectivity within the Western Balkans and with the European Union.
- Improving accessibility and mobility on the TEN-T Network.
- Building the transport of the future towards a smart, sustainable, green, safe and resilient TEN-T network.
- EU acquis implementation and associated policy reforms.

As per the provisions of Regulation no. 1315/2013, TEN-T comprises a dual-layer structure consisting of the Comprehensive and Core Networks, the latter consisting of prioritized sections of the Comprehensive Network. The total length of the TEN-T road network in the Western Balkans is 5,287.41 km, of which 3,540.55 km are on the Core Network. The TEN-T road network is deemed to include high-quality roads (motorways, expressways, or conventional strategic roads) specially designed and built for motor traffic with adequate levels of safety. Based on the findings of the TCT Secretariat's Annual Report on Development of the indicative TEN-T extension of Core and Comprehensive Network to the Western Balkans, 45% of Core Network and 52% of Comprehensive network are compliant with TEN-T standards related to infrastructure profile and condition.

2.3.3 Priority projects maturity in Bosnia and Herzegovina

Focusing on road action plan yearly progress 2020-2021, BiH has achieved 33 percent of the goals set with respect to establishing a functioning and efficient road maintenance system, 17 percent of goals set in ITS deployment and 8 percent of goals set with respect to enhancing of road transport climate resilience and use of alternative fuels.

Following tables, extracted from the strategic document, describe the maturity of Bosnian priority projects in road transportation sector. In Table 69, are represented mature projects, each project is declined from belonging to a transport corridor and to the TEN-T Network and a short description. Finally, are described the cost and the time horizon within which conclusion is expected.

Table 69 Road Transport Project Based on TEN-T Extension of the Comprehensive and Core Network in Western Balkans - Mature priority projects. [Source: Five-year Rolling Work Plan for Development of the Indicative TEN-T Extension of the Comprehensive and Core Network in Western Balkans, Permanent Secretariat of Transport Community, April 2022]

Corridor / Route / Node	TEN-T Network	Regional Partner	Project Name	Project cost (M€)	Expected Completion
ECONOMIC AND INVESTMENT PLAN FOR WESTERN BALKANS FLAGSHIP 2 - CONNECTING NORTH TO SOUTH					
Road projects					
Corridor Vc	Core	BIH	Construction of the Corridor Vc motorway section: Ivan – Konjic (Ovcari) – exit from tunnel Prenj (Salakovac)	686	2027
Corridor Vc	Core	BIH	Construction of the Corridor Vc motorway section Exit from Tunnel Prenj (Salakovac) – Mostar North	130	2027
Route 2b	Comprehensive	BIH	Improvement and construction of the road route Sarajevo – Foca (Brod na Drini) – Hum (Scepan Polje) with the interstate bridge at the border BIH/MNE	300	no data provided
ECONOMIC AND INVESTMENT PLAN FOR WESTERN BALKANS FLAGSHIP 3 – CONNECTING THE COASTAL REGION					
Road projects					
Route 2a	Core	BIH	Construction of the expressway section Turbe – Nevića Polje – Lašva	641	2027

Table 70 represents non-mature or under preparation priority projects. For each project, the inherent Transport Corridor or the TEN-T Network is indicated, along with a brief description and the expected cost in millions of Euros.

Table 70 Road Transport Project Based on TEN-T Extension of the Comprehensive and Core Network in Western Balkans - Mature priority under preparation.

Corridor / Route / Node	TEN-T Network	Regional Partner	Project Name	Project cost (M€)
Road projects				
Route 2a	Core	BIH	Betterment of the main road section (bypass) Banja Luka – Jajce – Lašva	169
Route 2a	Core	BIH	Betterment of the road section Banja Luka (Bypass) – Jajce – Lašva, part in FBiH Ugar – Jajce – Lašva	169
Route 2a	Core	BIH	Improvement (betterment) of the road route Banja Luka – entity border (Ugar), construction of Banja Luka Bypass and construction of the interstate bridge over Sava River in Gradiska	146
Route 3	Comprehensive	BIH	Construction of expressway Sarajevo – Visegrad – Border BiH/SRB	1145

2.3.4 Summary of Road Transport Projects

Considering the analysis of the current transport system (the analysis carried out in the first paragraph), the main existing strategic documents for the area in terms of infrastructure and mobility development and the results of the analysis of existing National and international Strategic Plans presented in the previous paragraph of the volume, are now defined the most relevant road projects classified with respect to the state

of progress and the main objective. Following list of selected interventions also constitutes a geographical database.

The table below includes the road infrastructural projects identified in the country and characterized by type of project (upgrade or new construction), main goal of the intervention and the belonging scenario (baseline 2030/2040, or project). The Baseline scenario has been defined by selecting the main ongoing and planned projects in the Region with a national/regional relevance, and very mature projects whose implementation is already planned and financed. Project scenario describes interventions which are included in a plan/program/strategy but still not financed or not entirely financed.

Table 71 Road projects in Bosnia and Herzegovina

ID	Scenario	Object	Name	Main goal
BA1	Baseline 2030	New construction	Corridor Vc: Construction of Svilaj - Odžak / Svilaj Bridge	Construction of a border crossing between Bosnia and Herzegovina and Croatia
BA2	Baseline 2030	New construction	Construction of Road Corridor Vc: TUNNEL ZENICA - DONJA GRADANICA	Construction of Road Corridor Vc
BA3	Baseline 2030	New construction	Construction of Road Corridor Vc: BUNA - POČITELJ	Construction of Road Corridor Vc
BA4	Baseline 2030	New construction	Construction of Road Corridor Vc: PONIRAK - TUNNEL ZENICA	Construction of Road Corridor Vc
BA5	Baseline 2030	New construction	Construction of Road Corridor Vc: JOHOVAC - RUDANKA INTERCHANGE	Construction of Road Corridor Vc
BA6	Baseline 2030	New construction	Construction of Road Corridor Vc: TARČIN - IVAN SUBSECTION I	Construction of Road Corridor Vc
BA7	Baseline 2030	New construction	Construction of Road Corridor Vc: TARČIN - IVAN SUBSECTION II / TUNNEL IVAN	Construction of Road Corridor Vc
BA8	Baseline 2030	New construction	Construction of Road Corridor Vc: POČITELJ - ZVIROVIĆI	Construction of Road Corridor Vc
BA9	Baseline 2030	New construction	Construction of Road Corridor Vc: RUDANKA - PUTNIKOVO BRDO	Construction of Road Corridor Vc
BA10	Baseline 2030	New construction	Construction of Road Corridor Vc: PUTNIKOVO BRDO - MEDAKOVO	Construction of Road Corridor Vc
BA11	Baseline 2030	New construction	Construction of Road Corridor Vc: POPRIKUŠE - NEMILA	Construction of Road Corridor Vc
BA12	Baseline 2030	New construction	Construction of Road Corridor Vc: TUNEL KVANJ - BUNA	Construction of Road Corridor Vc
BA13	Project	New construction	Construction of the cross-border bridge over the river Sava (Bosnia and Herzegovina - Croatia R2a Road Interconnection)	Construction of a border crossing between Bosnia and Herzegovina and Croatia
BA14	Project	New construction	Corridor Vc: Construction of Johovac-Vukosavlje motorway	Faster connection and more capacity in the north-south axis
BA15	Project	New construction	Corridor Vc: Construction of the Medakovo - Ozimica Motorway	Faster connection and more capacity in the north-south axis
BA16	Project	New construction	Construction of corridor Vc- section between Mostar North-Mostar South motorway	Faster connection and more capacity in the north-south axis
BA17	Project	New construction	Motorway Banja Luka - Prijedor	Faster connection in section between Banja Luka and Croatia border

ID	Scenario	Object	Name	Main goal
BA18	Baseline 2030	New construction	Construction of the Ozimica - Poprikuse Motorway	Construction of Road Corridor Vc
BA19	Baseline 2030	New construction	Construction of Road Corridor Vc: NEMILA-VRANDUK	Construction of Road Corridor Vc
BA20	Baseline 2030	New construction	Construction of Road Corridor Vc: Construction of the Vranduk - Ponirak Motorway	Construction of Road Corridor Vc
BA21	Baseline 2030	New construction	Corridor Vc: Construction of the Klopce - Drivusa Motorway	Construction of Road Corridor Vc
BA22	Project	Upgrade	Improvement and construction of the road route Sarajevo - Foca (Brod na Drini) - Hum (Scepan Polje) with the interstate bridge at the border BIH/MNE	Improvement of Sarajevo Road connection with the region
BA23	Project	New construction	Construction of the expressway section Turbe – Nevića Polje –Lašva	Improvement of Sarajevo Road connection with the region
BA24	Project	Upgrade	Betterment of the road section Banja Luka (Bypass) - Jajce - Lasva, part in FBiH Ugar - Jajce - Lasva	Improvement of Sarajevo Road connection with the region
BA25	Project	Upgrade	Improvement (betterment) of the road route Banja Luka - entity border (Ugar), construction of Banja Luka Bypass	Improvement of Sarajevo Road connection with the region
BA26	Project	New construction	Construction of expressway Sarajevo - Visegrad - Border BIH/SRB	Improvement of Sarajevo Road connection with the region

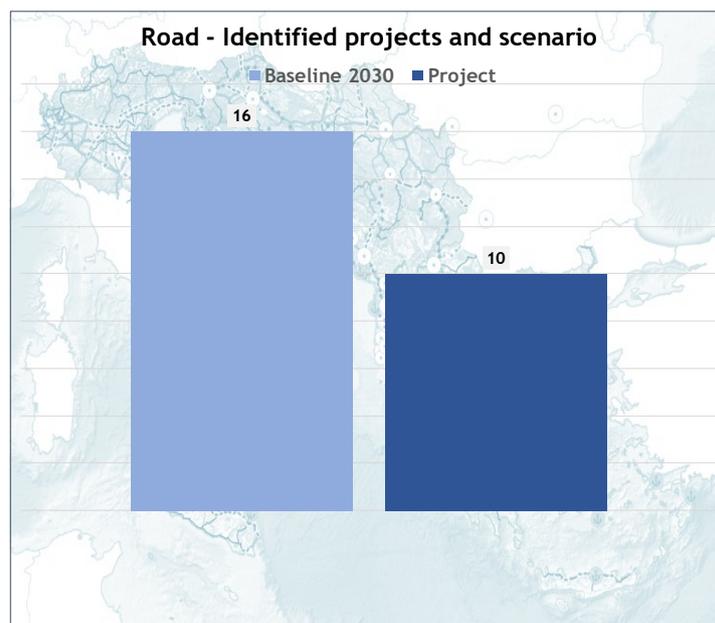


Figure 47 Road projects by scenario, in Bosnia and Herzegovina

26 road interventions selected in Bosnia and Herzegovina are now represented in a map in which is possible to recognize functionally classified current road network (primary, secondary, tertiary) and road project classified by scenario.



Figure 48 – Map of road project by scenario in Bosnia and Herzegovina

Map below is a smaller scale map here to help the reader locate the interventions IDs in the northern area of the Country.

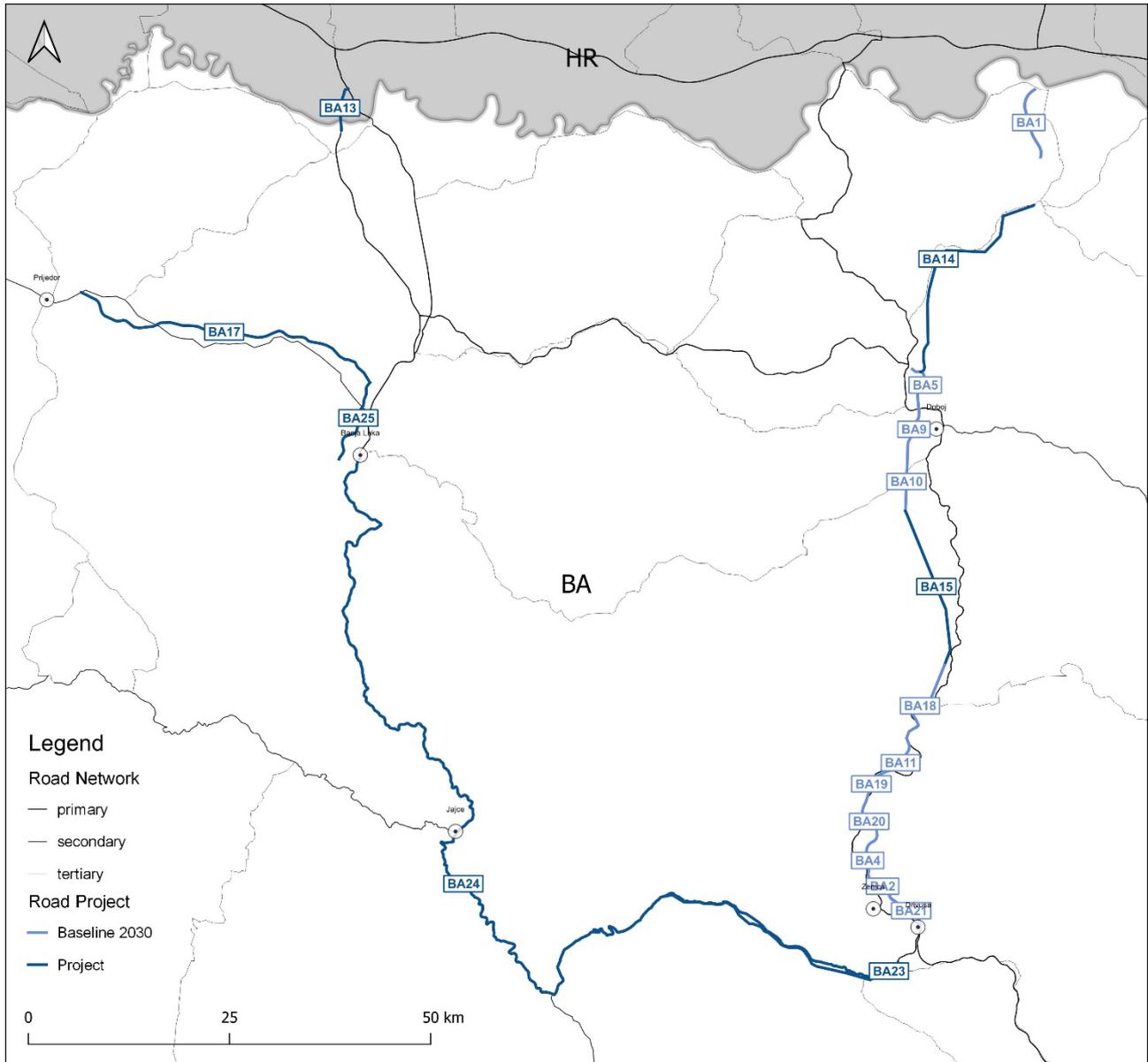


Figure 49 Map of road project by scenario in Bosnia and Herzegovina – Northern area

2.4 Montenegro

2.4.1 National Transport Strategy and Action Plan

The “Transport Development Strategy (TDS) of Montenegro”²² aims to support the improvement of economic efficiency, safety, accessibility, and the environment sustainability of the country's transportation system, while ensuring national and Community policies. The development of transport Strategy (TDS) will

²² <https://dokumen.tips/documents/transport-development-strategy-report.html?page=1>

assist the Ministry of Transport and Maritime Affairs (MTMA) of Montenegro to provide a solid framework for its operations and at the same time to pose lay the foundation for the future development of the transport sector in a sense respond to the socio-economic needs of the country, in line with the TEN-T guidelines and EU policies. The TDS will determine the condition of the various transportation areas, will define the concept of transportation system development, establish long-term objectives for the development of transport infrastructure and establish an action plan for their implementation.

The role of the TDS is to create the path for improving and upgrading Montenegro's transportation system and to support full harmonization with EU policies and requirements TDS sets five high-level/strategic objectives, which reflect the vision for the country's future transportation system:

1. **Economic Welfare:** Achieve economic efficiency and financial sustainability and support for economic development.
2. **Accessibility, Performance of Operations and Quality of Services:** Provide maximum possible accessibility, offer quality transportation services and maintain an adequate performance in operations, as a whole and with respect to its individual elements within the system.
3. **Safety and Security:** Improve safety, security of people and goods in the transportation sectors.
4. **EU Integration:** Core transportation network and policies which are fully compatible and integrated to EU requirements.
5. **Environmental Sustainability:** Minimize carbon footprint, noise pollution and impact to the natural, historical and socio-economic environment. For this objective, a special Separate has been prepared: Strategic environmental impact assessment of Transport Development Strategy – Montenegro, period 2018-2035.

On the other hand, seven priority areas represent generic aspects of the transport sector (services as well as infrastructure) on which measures are to be applied. These areas are:

- Priority Area 1: Organization of the transport sector
- Priority Area 2: Transport investments
- Priority Area 3: Level of service on networks
- Priority Area 4: Financial sustainability
- Priority Area 5: Management of rail and port services
- Priority Area 6: Implementation of intelligent transportation systems (ITS)
- Priority Area 7: Intermodality and road freight transport

2.4.2 Proposed objectives and measures

Based on the established strategic objectives, TDS defines specific objectives related to transport infrastructure and proposed measure.

The following table highlights relevant specific objectives, targeting into road transport infrastructures and summarizes measures and objectives addressed.

Table 72 Summary of infrastructure measures. [Source: Transport Development Strategy - Montenegro 2019-2035, Ministry of Transport and Maritime Affairs of Montenegro]

Specific Objective		Measures
1.1	Complete infrastructure projects in SPP	<ul style="list-style-type: none"> • Program and monitor single pipeline projects for target years 2025 and 2035. • Continue and intensify actions towards project completion. • Align project activities and programming with those of neighbouring countries.
1.2	Align rail with interoperability requirements	<ul style="list-style-type: none"> • Introduce European Rail Traffic Management System (ERTMS) in rail network. • Expand overtaking sections length of selected rail stations up to 740 m
1.3	Reduce border clearance times	<ul style="list-style-type: none"> • Add control booths in road border crossings
1.4	Improve connectivity in the Port of Bar	<ul style="list-style-type: none"> • Improve rail connection segments to Port of Bar • Expand piers and passenger terminal
2.1	Maintain adequate LOS of state road network	<ul style="list-style-type: none"> • Reconstruct state road sections • Upgrade roads to recreational areas (ski and coastal resorts).
2.2	Complete rail network overhaul and improve rail infrastructures	<ul style="list-style-type: none"> • Upgrade the railway lines through implementation of planned rehabilitation works of the railway network
2.3	Revitalize and / or upgrade transport infrastructure in maritime transport	<ul style="list-style-type: none"> • Increase of transshipment of general cargo and containers by securing

Specific Objective		Measures
		<p>the status of a transhipment port;</p> <ul style="list-style-type: none"> • Expansion of the capacity for transhipment and storage of dry bulk cargo on the northern slope of Volujica hill; • Increase of transhipment of liquid and bulk cargo.
2.4	Reinforce the creation of an efficient and integrated transport system through intermodality	<ul style="list-style-type: none"> • Develop intermodal stations in Podgorica and Bijelo Polje
2.5	Determine possibilities and needs for revitalization and/or reconstruction of transport infrastructure of air transport	<ul style="list-style-type: none"> • Valorisation of other airports in Montenegro (besides Podgorica and Tivat)
2.6	Deployment of ITS technologies in the road, rail and maritime sectors	<ul style="list-style-type: none"> • Installation of ITS equipment in the core network and selected parts of the main road network (variable message signs, dynamic signage etc.). • Installation of axle load measuring systems. • Completion of Vessel Traffic Management Information System (VTMIS).
3.1	Improve road safety on state road network	<ul style="list-style-type: none"> • Complete planned road reconstruction projects (2019-2021). • Improve signage and road furniture of main roads

Following table summarizes measures aimed at improving organizational and operative aspects of functioning of the transport system, which correlate with indicated specific objectives.

Table 73 Summary of organizational and operational measures [Source: Transport Development Strategy - Montenegro 2019-2035, Ministry of Transport and Maritime Affairs of Montenegro]

Specific objectives		Organizational and operational measures
1	Secure a good governance and management structure across the whole life cycle of highways.	<ul style="list-style-type: none"> • Introduction of Total Quality Management in transportation systems and services. • Personnel training in transport infrastructure management
2	Create conditions for coordination between transport stakeholders	<ul style="list-style-type: none"> • Expansion of e-governance • Development of a monitoring and data collection system in transport sector
3	Update governance structure and bodies in transport sector	<ul style="list-style-type: none"> • Adoption and implementation of remaining EU legislation and completion of bylaws • Establishment of a body for regulatory activities on the railway
4	Re-organize governance responsibilities in transport sector	<ul style="list-style-type: none"> • Redistribution of responsibilities in transport sector management
5	Secure alternative funding sources for transport investments	<ul style="list-style-type: none"> • Introduction of new funding sources and market players, mainly in the form of concessions
6	Improve programming and allocation of funds and achieve efficiency in road transport operations	<ul style="list-style-type: none"> • Development of asset management system
7	Better valorisation of transport subjects in air transport sector	<ul style="list-style-type: none"> • Better valorisation of certain port services • Valorisation of the Port of Bar as the new cruising destination
8	Achieve efficiency in operations, maintenance expenditures and budget allocation in order to promote environment friendly projects in transport sector	<ul style="list-style-type: none"> • Promotion of alternative fuels and electro-mobility • Promotion of road transport fleet replacement / renewal • Establishment of the Virpazar inland navigation line



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Specific objectives		Organizational and operational measures
9	Reduce border clearance times	<ul style="list-style-type: none"> Establish border processes in cooperation with neighbouring countries
10	Alleviate barriers in rail transport	<ul style="list-style-type: none"> Adoption and implementation of the remaining EU legislation Facilitation of the introduction of new market players in rail services
11	Reinforce the creation of an efficient and integrated transport system through intermodality	<ul style="list-style-type: none"> Promote and support intermodal agreements Develop a study on intermodality in Montenegro
12	Enhance support for road freight transport	<ul style="list-style-type: none"> Introduce ITS services targeting to road freight transport
13	Improve connectivity of the Port of Bar	<ul style="list-style-type: none"> Better valorisation of certain port services Valorisation of the Port of Bar as the new cruising destination
14	Maintain adequate LOS of state road network	<ul style="list-style-type: none"> Plan and operate efficient and passenger friendly interurban public transport services
15	Deployment of ITS technologies in the road, rail and maritime sectors	<ul style="list-style-type: none"> Preparation of studies for ITS development and implementation Seek financing instruments for ITS deployment
16	Improve traffic safety on state road network	<ul style="list-style-type: none"> Plan Road Safety Inspection and Road Safety Audit Activities Improve road safety surveillance and systematic traffic enforcement of the Law on Roads

Necessary measures are identified and proposed for tackling problems associated with specific objectives. Regarding specific objective 1.1 (Complete infrastructure projects in Single Pipeline Project), proposed measures are looking for a solution to the limited capacities of existing road network and a slow travel time due to its alignment. Road sector projects per programming are summarized in Table 74.

Table 74 Summary of road projects [Source: Transport Development Strategy - Montenegro 2019-2035, Ministry of Transport and Maritime Affairs of Montenegro]

Sector	Year 2027	Year 2035	Align with neighbouring countries
Road	Highway Bar-Boljare, section Mateševo – Andrijevića	Adriatic-Ionian expressway coastal variant, section Border with Croatia - Bijela (Bypass Herceg Novi & Herceg Novi-Bijela)	Yes
	Highway Bar-Boljare, section Andrijevića – Boljare	Adriatic-Ionian expressway coastal variant, Bypass Tivat	
	Adriatic-Ionian expressway coastal variant, Corridor through Bay of Kotor	Adriatic-Ionian expressway coastal variant, section Bar – Border with Albania.	
	Adriatic-Ionian expressway coastal variant, Bypass Budva	Adriatic-Ionian expressway coastal variant, Bypass Bar	
	Reconstruction of the Šćepan Polje-Plužine highway (border crossing with Bosnia and Hercegovina)	Highway Bar-Boljare, bypass Podgorica, section Smokovac – Tološi - Farmaci	
		Highway Bar-Boljare, section Đurmani – Farmaci	

Regarding specific objective 2.1. (Maintain adequate LOS of state road network), proposed measures are looking for the upgrade of existing network performance and the improvement of some main and regional segments in Montenegro which exhibit low Level of service (LOS). Measures proposed are together with state road sections reconstruction, upgrade of road to major interest areas. Sections are summarized in Table 75.

Table 75 Summary of state road sections to be reconstructed and upgraded. [Source: Transport Development Strategy- Montenegro 2019-2035, Ministry of Transport and Maritime Affairs of Montenegro]

ID	Road Section	Completion Year	
		2025	2035
1	Berane – Kolašin	√	
2	Bijelo Polje – Ribarevina	√	
3	Danilovgrad – Nikšić	√	
4	Debeli Brijeg – Herceg Novi	√	
5	Vruja – Mijakovići	√	
6	Krstac – Ivanova Korita	√	
7	Tivat – Jaz	√	
8	Lepenac – Ribarevina	√	
9	Ribarevina – Poda – Berane	√	
10	Berane – Lokve tunnel	√	
11	Kamenovo – Petrovac – Bar	√	
12	Cetinje – Čevo	√	
13	Berane – Trpezi – Kalače	√	
14	Cetinje – Njeguši	√	
15	Stijepač bridge – Tomaševo – Pljevlja	√	
16	Mojkovac – Ribarevina	√	
17	Bijelo Polje – Ribarevina bypass	√	
18	Podgorica – Danilovgrad	√	
19	Dinoša – Cijevna Zatrijebačka	√	
20	Pljevlja – Metaljka	√	
21	Ulcinj – Sukobin	√	
22	Podvode – Petnjica	√	
23	Rožaje 2 nd Phase bypass	√	
24	Podgorica – Tuzi – Božaj border crossing	√	
25	Rožaje – Špiljani	√	
26	Mojkovac – Lubnice	√	
27	Nikšić – Vilusi	√	
28	Pluzine-Nikšić		√
29	Andrijevića – Vuče – Border with Kosovo		√
30	Etc.	*	

* Plan for regular maintenance investments, reconstruction and construction of state roads (main and regional roads) is a continuing process which must be updated annually, which contributes to enhancement in quality, safety and LOS of Montenegrin state roads.

2.4.3 Overview of transport project in Montenegro based on “Five-year Rolling Work Plan for Development of the Indicative TEN-T Extension of the Comprehensive and Core Network in Western Balkans”²³

This work plan is a Strategic document which represents an important basis for a “common, more focused approach to regional connectivity” for the implementation of the Transport Community Treaty.

The main purpose is to ensure coordinated development of the TEN-T in the region and achieve transition to a cohesive network, while all regional partners are pursuing their own connectivity goals.

The document provides an overview of the state of play in development of the indicative extension of the TEN-T network, in term of compliance with TEN-T Standards, to the Western Balkans. The status shown is based on data from the Annual Report on the Development of the TEN-T network of the Regional Steering Committee.

Another document’s section includes an overview of TEN-T development plans in the region by analysing regional plan, the top priorities for the region in terms of TEN-T network development, a list of concrete actions for Regional Partners to focus on over the next few years.

Finally, The Transport Community Permanent Secretariat has developed a Sustainable and Smart Mobility Strategy for the Western Balkans together with a corresponding GAP analysis. The purpose is also providing a roadmap for digitalisation and decarbonisation of the region’s transport sector.

The main objectives identified for the region are summarized below.

Key objectives:

- Enhancing connectivity within the Western Balkans and with the European Union.
- Improving accessibility and mobility on the TEN-T Network.
- Building the transport of the future towards a smart, sustainable, green, safe and resilient TEN-T network.
- EU acquis implementation and associated policy reforms.

As per the provisions of Regulation no. 1315/2013, TEN-T comprises a dual-layer structure consisting of the Comprehensive and Core Networks, the latter consisting of prioritized sections of the Comprehensive Network. The total length of the TEN-T road network in the Western Balkans is 5,287.41 km, of which 3,540.55 km are on the Core Network. The TEN-T road network is deemed to include high-quality roads (motorways, expressways, or conventional strategic roads) specially designed and built for motor traffic with adequate levels of safety. Based on the findings of the TCT Secretariat’s Annual Report on Development of the indicative TEN-T extension of Core and Comprehensive Network to the Western Balkans, 45% of Core Network and 52% of Comprehensive network are compliant with TEN-T standards related to infrastructure profile and condition.

²³ “Five-year Rolling Work Plan for Development of the Indicative TEN-T Extension of the Comprehensive and Core Network in Western Balkans”, Permanent Secretariat of Transport Community, April 2022

2.4.4 Priority projects maturity in Montenegro

Focusing on road action plan yearly progress 2020-2021, Montenegro has achieved 17 percent of the goals set with respect to establishing a functioning and efficient road maintenance system, 17 percent of goals set in ITS deployment and 8 percent of goals set with respect to enhancing of road transport climate resilience and use of alternative fuels.

Following tables, extracted from the strategic document, describe the maturity of Montenegrin priority projects in road transportation sector. In Table 76, are represented mature projects, each project is declined from belonging to a transport corridor and to the TEN-T Network and a short description. Finally, are described the cost and the time horizon within which conclusion is expected.

Table 76 Road Transport Project Based on TEN-T Extension of the Comprehensive and Core Network in Western Balkans - Mature priority projects.

Corridor / Route / Node	TEN-T Network	Regional Partner	Project Name	Project cost (M€)	Expected Completion
ECONOMIC AND INVESTMENT PLAN FOR WESTERN BALKANS FLAGSHIP 2 - CONNECTING NORTH TO SOUTH					
Road projects					
Route 2b	Comprehensive	MNE	Reconstruction of the main way Sćepan Polje – Plužine (border crossing with Bosnia and Hercegovina)	139	2027

Table 77 represents non-mature or under preparation priority projects. For each project, the inherent Transport Corridor or the TEN-T Network is indicated, along with a brief description and the expected cost in millions of Euros.

Table 77 Road Transport Project Based on TEN-T Extension of the Comprehensive and Core Network in Western Balkans - Mature priority under preparation.

Corridor / Route / Node	TEN-T Network	Regional Partner	Project Name	Project cost (M€)
Road projects				
Route 1	Core	MNE	Route 1: coastal variant of the Adriatic – Ionian Motorway/Expressway along Montenegro's coast	1013
Route 4	Core	MNE	Highway Bar – Boljare: bypass Podgorica, section Smokovac – Tološi – Farmaci	280
Route 4	Core	MNE	Highway Bar – Boljare, section Djurmani – Farmaci	441
Route 4	Core	MNE	Highway Bar – Boljare, section Andrijevicica – Boljare	731

2.4.5 Summary of Road Transport Projects

Considering the analysis of the current transport system (the analysis carried out in the first paragraph), the main existing strategic documents for the area in terms of infrastructure and mobility development and the results of the analysis of existing National and international Strategic Plans presented in the previous paragraph of the volume, are now defined the most relevant road projects classified with respect to the state of progress and the main objective. Following list of selected interventions also constitutes a geographical database.

The table below includes the road infrastructural projects identified in the country and characterized by type of project (upgrade or new construction), main goal of the intervention and the belonging scenario (baseline 2030/2040, or project). The Baseline scenario has been defined by selecting the main ongoing and planned projects in the Region with a national/regional relevance, and very mature projects whose implementation is already planned and financed. Project scenario describes interventions which are included in a plan/program/strategy but still not financed or not entirely financed.

Table 78 Road projects in Montenegro

ID	Scenario	Object	Name	Main goal
ME1	Project	New construction	Construction of Adriatic Motorway: section Border with Croatia - Bijela (Bypass Herceg Novi & Herceg Novi-Bijela)	Faster connection and more capacity along the coastal road
ME2	Baseline 2030	Upgrade	Reconstruction of road Scepan Polje (BiH Border) - Pluzine	Selected alternatives aims to significantly increase the level of services of the road through improved situation plan and cross sections geometry, increased road safety level, significant road protection against falls during winter periods, with large deviations from the route of the existing road.
ME3	Baseline 2030	New construction	Construction of Budva Bypass	Construction of road bypasses for Montenegro's main coastal cities and towns would contribute to a seamless connection between Croatia, Bosnia and Herzegovina, Montenegro and Albania, removing the bottlenecks on SEETO Route 1 along the Montenegrin Coast.
ME4	Baseline 2030	New construction	Highway Bar-Boljare: Construction of Podgorica bypass (section Smokovac – Tološi – Farmaci)	Faster connection on the Bar-Boljare highway
ME5	Project	New construction	Construction of Motorway Bar-Boljare: section Durmani - Farmaci	Faster connection on the Bar-Boljare highway
ME6	Baseline 2030	New construction	Reconstruction of the road Niksic - Vilusi	Faster and safer connection between the two cities
ME7	Baseline 2030	Upgrade	Reconstruction of the road Mojkovac-Lubnice: section Mojkovac-Vragodo	This project will contribute to improving road infrastructure in the north and is important for residents of this region
ME12	Project	New construction	Construction of Adriatic Motorway: Bar - Albanian Border	Faster connection and more capacity along the coastal road
ME13	Project	New construction	Highway Bar-Boljare: section Mateševo-Andrijeвица	Faster connection on the Bar-Boljare highway
ME14	Project	New construction	Highway Bar-Boljare:section Andrijeвица-Boljare (Border with Serbia)	Faster connection on the Bar-Boljare highway

ID	Scenario	Object	Name	Main goal
ME15	Baseline 2030	New construction	Highway Bar-Boljare: section Smokovac - Mateševo	Faster connection on the Bar-Boljare highway
ME16	Baseline 2030	Upgrade	Reconstruction and widening of road section M-2 Rozaje - Spiljani, including works on 5 bridges and 10 tunnels	Faster connection and more capacity along east west axis across the region
ME17	Baseline 2030	Upgrade	Reconstruction and widening of road section M-2 Berane - Bijelo polje -Mojkovac, length: 43 km	Faster connection and more capacity along east west axis across the region
ME18	Baseline 2030	Upgrade	Reconstruction and widening of road section M-3 Danilovgrad - Podgorica; length: 15 km (2+2 traffic lanes), including works on 5 bridges and 5 roundabouts.	Faster connection and more capacity along east west axis across the region

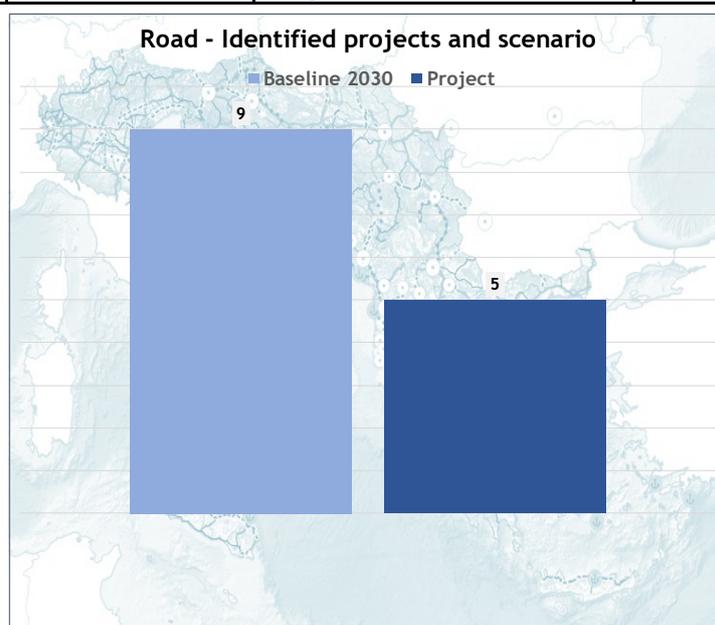


Figure 50 Road projects by scenario, in Montenegro

18 road interventions selected in Montenegro are now represented in a map in which is possible to recognize functionally classified current road network (primary, secondary, tertiary) and road project classified by scenario.

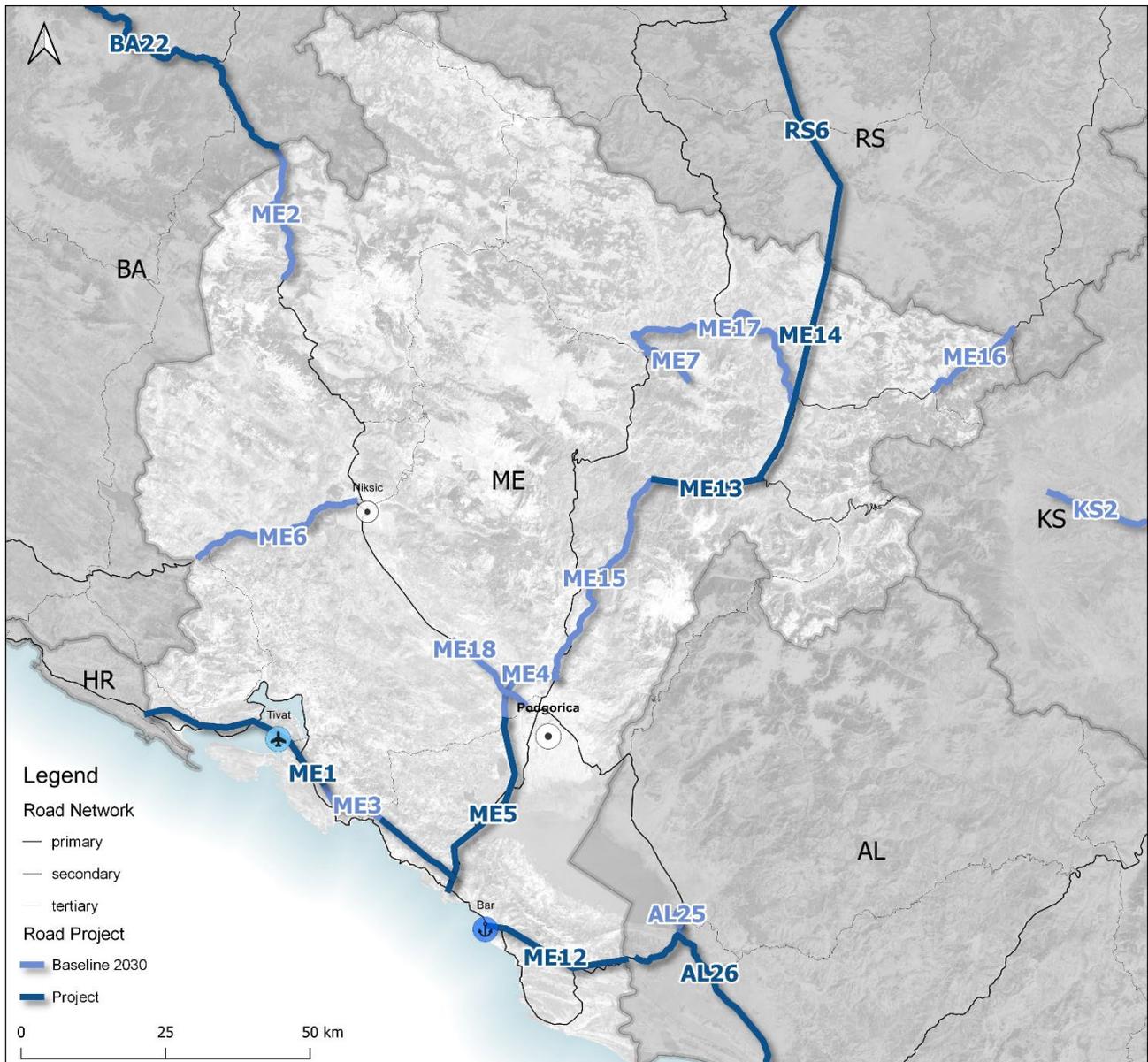


Figure 51 – Map of road project by scenario in Montenegro.

2.5 Serbia

2.5.1 National Transport Strategy and Action Plan

“Strategy of railway, road, inland waterway, air and intermodal transport development in the republic of Serbia, 2008 – 2015”²⁴ defines goals and objectives for transport system development and Action Plan for them implementation in the Republic of Serbia. Guidelines for such development are based on safety and

²⁴ https://www.putevi-srbije.rs/images/pdf/strategija/Strategijatransport_eng.pdf

intermodality principles, the application of new technologies, and, above all, on the rational exploitation of available capacities and resources in the country.

Attracting international transit flows of freight and passengers represents a framework for shape the development of the transportation system and set priorities in strategic planning.

Taking into account the above mentioned, the transport infrastructure promotion must primarily focus on the improvement of the existing networks, the level of safety and services, construction of additional lanes/tracks and by-passes in the context of environmental improvement, relocation of transit flows out of the urban city zones, modernization of equipment, reconstruction of crossroads and elimination/rehabilitation of highly risky road sections.

2.5.2 Proposed objectives and measures

Considering the experiences of developed European countries in the transport sector, the transport development policy in the Republic of Serbia should be in the function of subsidiary goals and it should be based on the analysis of the effectiveness and efficiency of individual sectors. This should provide the choice and offer of optimized transport options, reached using intermodal solutions.

The main points of reference of complementary transport policy can be generalized through:

- redirecting the demand towards ecologically more acceptable modes of transport
- application of relevant and the state-of-the-art technologies
- fair infrastructure charges
- intermodal cooperation in transport
- modification of regulations
- flexible determination of transit transport charges
- prevention of unnecessary transport
- socially and ecologically more acceptable organization of urban and suburban passenger public transport
- facilitating the integration of transport networks (solving border crossing issues regarding infrastructure, organization, and border crossing procedures).

In accordance with the assumptions of the EU transport policy, which is set in the White Paper “European Transport Policy for 2010: Time to decide” and the Strategy of sustainable transport development (The ECMT Council, Prague 2000), the main goals of complementary transport policy are:

- purposeful planning and transport flows management
- reduction of harmful effects of transport on the environment
- increase of traffic safety
- increase of transport system efficiency
- compensation of the consequences of market deregulation and liberalization in the transport sector.

Although it may seem that some goals are not sensitive to the criteria of satisfying real transport demand, in the long-term they provide optimal integration of the transport sector into the national and international framework of progressive economic development.

Investment policy and programs of transport infrastructure investments are based on the identification of relevant critical elements of infrastructure management, and the following:

- definition of distribution of investments into certain modes of transport
- definition of the ratio between investment in construction and investment in maintenance of transport infrastructure for each transport mode, especially taking into account reconstructions and routine maintenance backlog
- adequate infrastructure charges (institutional and social limitations which obstruct the charging of real expenses)
- solving the productivity problem (excess of personnel, lack of competitiveness)
- market and regulatory reform
- partnership of the public and private sector
- adoption of European norms
- methodology of making investment decisions.

Development of the transport system

Focus on road transport:

- **Modern road network:** The Republic of Serbia gives priority to the system of interoperable highway corridors, on which the same standards are met along the whole corridor, in terms of service level, safety, toll charging system, information and different services. This system contributes to the increase of users' comfort and to increased traffic safety on the corridor, additionally affecting economic development and increase in demand for services. The current major and regional road network consists of about 15,000 km of roads, and the state road network will be considerably reduced by re-categorization. Priority in the first medium-term period will be given to rehabilitation, maintenance, completion and harmonization of the characteristics of state roads category I and constructions on the road network. City bypasses, state roads category II and municipal roads and streets are to be developed according to the need to harmonize and homogenize the characteristics of the whole network.
- **Road transport development:** Unequal development of transport modes proves the fact that certain modes of transport are more adaptable to bigger changes which happen in the economy and production. More favorable economic conditions for companies, flexibility and capability to meet promptly the requirements of modern economy enabled the greatest share of road transport on transport market. Considering the geographical position of the Republic of Serbia as a transit country, the road transport, especially international one, has an important role in the economy development thanks to the constant growth. The result of road transport comparative advantages and of the increase of transit volume through the territory of the Republic of Serbia will be a further volume growth of road transport. Challenges that road transport faces are characterized with bigger expectations from users in terms of services of more quality, time losses on border-crossings and delays in the central urban areas, high expenditures and bigger competition. Rapid road transport development can lead to congestions on the main routes in cities as well, and it may have a negative influence on the environment and the health of the population and decrease of traffic safety level. It is necessary to make conditions for redirection of the demand to other modes of transport with the aim of controlling the excessive development of the road transport.
- **Intelligent transport system application:** In situations when due to spatial, ecological and financial restriction, the realization of new infrastructure projects is significantly difficult, ITS application allows more efficient usage of the existing infrastructure and in that way enables more efficient and

more economical movement of passengers and goods in all transport modes. The current state of ITS application in great extent is conditioned by the lack of financial support to the development and deployment of ITS on roads, limited knowledge of the benefit of the usage of ITS and modest capacity of the institutions which must promote and develop ITS. Reasonable usage of ITS, coordinated in accordance with the Strategy should significantly enhance the efficiency, safety and security in road transport and provide significant investments into ITS development and deployment. In that way delays will be reduced, energy efficiency and road transport safety and security will be greater, and the environmental impact will be less. Guidelines for the development and application of ITS, adopted and coordinated by the ministry competent for traffic affairs, should make the legal and strategic framework for promotion of the ITS usage and bigger engagement of the private capital.

- **Road traffic safety:** Adoption of new road traffic safety regulations allows the setting up of the system for traffic safety management which achieves efficiency of the whole road transport, reduces the number of the killed and contributes to reduction of social-economic costs. From the road transport aspect the harmonization with new EU rules on periods of driving and rests for drivers and controls on roads is necessary.
- **Improvement of competition of domestic operators on the transport market:** Thanks to the growth of private transport companies and the presence of foreign investments in the sphere of road transport, the competitiveness is being intensified at high speed. The imperative is to protect and improve competitiveness of local carriers with professional and rational management of companies and transport operations sticking to the principle of nondiscrimination, fair competition and improvement of quality of services offered. The efficient road transport which fulfills the highest standards of safety and professionalism is necessary for continuing economic state development. Hence, it is necessary to make conditions in which due to further development, the economy and the state would act in harmony. Enhancement of the cooperation is necessary especially with a view to further development of services, introduction of possible programs for the development of companies and their mutual cooperation, reduction of costs and availability of information on market conditions. The road transport development should be directed to better professionalism in the sphere and harmonization of national regulations with EU regulations. The alleviated approach for domestic carriers to the European transport market in the future, and especially after the EU accession, will depend on fulfillment of criteria referring to carriers' performance of the road traffic activities in terms of a specific level of professional qualification for managers in a transport company, good reputation and specific financial state for the company.
- **Environment protection:** Environment protection, promotion and stimulation of all types of clean technologies for public road construction and maintenance represent the basis of state policy, which refer to the use of "cleaner" engines and machines.
- **Sustainable financing:** The Republic of Serbia will provide sustainable state roads maintenance financing, which means network maintenance financing from stable sources, defined by law, which fully covers the needs. The Republic of Serbia will finance routine state road network maintenance from the road fund which will be established for the purpose. The financing system of the fund (road use charges, taxes, levies, budget, loans and credits) must be transparent, and it should involve methods and procedures for uniform setting of project priorities.

2.5.3 Overview of transport project in Serbia based on “Five-year Rolling Work Plan for Development of the Indicative TEN-T Extension of the Comprehensive and Core Network in Western Balkans”²⁵

This work plan is a Strategic document which represents an important basis for a “common, more focused approach to regional connectivity” for the implementation of the Transport Community Treaty.

The main purpose is to ensure coordinated development of the TEN-T in the region and achieve transition to a cohesive network, while all regional partners are pursuing their own connectivity goals.

The document provides an overview of the state of play in development of the indicative extension of the TEN-T network, in term of compliance with TEN-T Standards, to the Western Balkans. The status shown is based on data from the Annual Report on the Development of the TEN-T network of the Regional Steering Committee.

Another document’s section includes an overview of TEN-T development plans in the region by analysing regional plan, the top priorities for the region in terms of TEN-T network development, a list of concrete actions for Regional Partners to focus on over the next few years.

Finally, The Transport Community Permanent Secretariat has developed a Sustainable and Smart Mobility Strategy for the Western Balkans together with a corresponding GAP analysis. The purpose is also providing a roadmap for digitalisation and decarbonisation of the region’s transport sector.

The main objectives identified for the region are summarized below.

Key objectives:

- Enhancing connectivity within the Western Balkans and with the European Union.
- Improving accessibility and mobility on the TEN-T Network.
- Building the transport of the future towards a smart, sustainable, green, safe and resilient TEN-T network.
- EU acquis implementation and associated policy reforms.

As per the provisions of Regulation no. 1315/2013, TEN-T comprises a dual-layer structure consisting of the Comprehensive and Core Networks, the latter consisting of prioritized sections of the Comprehensive Network. The total length of the TEN-T road network in the Western Balkans is 5,287.41 km, of which 3,540.55 km are on the Core Network. The TEN-T road network is deemed to include high-quality roads (motorways, expressways, or conventional strategic roads) specially designed and built for motor traffic with adequate levels of safety. Based on the findings of the TCT Secretariat’s Annual Report on Development of the indicative TEN-T extension of Core and Comprehensive Network to the Western Balkans, 45% of Core Network and 52% of Comprehensive network are compliant with TEN-T standards related to infrastructure profile and condition.

²⁵ “Five-year Rolling Work Plan for Development of the Indicative TEN-T Extension of the Comprehensive and Core Network in Western Balkans”, Permanent Secretariat of Transport Community, April 2022

2.5.4 Priority projects maturity in Montenegro

Focusing on road action plan yearly progress 2020-2021, Serbia has achieved 50 percent of the goals set with respect to establishing a functioning and efficient road maintenance system, 44 percent of goals set in ITS deployment and 42 percent of goals set with respect to enhancing of road transport climate resilience and use of alternative fuels.

Following tables, extracted from the strategic document, describe the maturity of Serbian priority projects in road transportation sector. In Table 79, are represented mature projects, each project is declined from belonging to a transport corridor and to the TEN-T Network and a short description. Finally, are described the cost and the time horizon within which conclusion is expected.

Table 79 Road Transport Project Based on TEN-T Extension of the Comprehensive and Core Network in Western Balkans - Mature priority under preparation.

Corridor / Route / Node	TEN-T Network	Regional Partner	Project Name	Project cost (M€)
Road projects				
Route 3	Comprehensive	SRB	Construction of highway E-761/ M-5/ Bosnia and Herzegovina Border – Kotroman – Uzice – Pozeza	832
Route 4	Core	SRB	Construction of Highway Romanian border - Vršac – Belgrade and connection to Corridor X	570
Route 4	Core	SRB	Construction of Pozeza – Boljare highway	1830
Corridor X	Core	SRB	Construction of the Belgrade Bypass Sector C	204

2.5.5 Summary of Road Transport Projects

Considering the analysis of the current transport system (the analysis carried out in the first paragraph), the main existing strategic documents for the area in terms of infrastructure and mobility development and the results of the analysis of existing National and international Strategic Plans presented in the previous paragraph of the volume, are now defined the most relevant road projects classified with respect to the state of progress and the main objective. Following list of selected interventions also constitutes a geographical database.

The table below includes the road infrastructural projects identified in the country and characterized by type of project (upgrade or new construction), main goal of the intervention and the belonging scenario (baseline 2030/2040, or project). The Baseline scenario has been defined by selecting the main ongoing and planned projects in the Region with a national/regional relevance, and very mature projects whose implementation is already planned and financed. Project scenario describes interventions which are included in a plan/program/strategy but still not financed or not entirely financed.

Table 80 Road projects in Serbia

ID	Scenario	Object	Name	Main goal
RS1	Baseline 2030	New construction	Construction of the Belgrade bypass: section from Ostruznica to Bubanj Potok	The proposed project will extend the Belgrade bypass providing a link between Pan-European transport Corridor X and Corridor IV and will allow an uninterrupted transit for traffic travelling between the E-75 and the E-70. It will also divert the majority of transit traffic out of the Belgrade urban area.
RS2	Project	New construction	Construction of the Belgrade bypass: section from Bubanj Potok to Pančevo	Extension of the Belgrade bypass providing a link between Pan-European transport Corridor X and Corridor IV

ID	Scenario	Object	Name	Main goal
RS3	Baseline 2030	New construction	Construction of the road Kragujevac - Batočina	Corridor X: the modern expressway will allow safe traffic from Kragujevac to the motorway
RS4	Baseline 2030	New construction	Construction of the A5 Motorway section between Pojate and Preljina (Morava Corridor)	Route 5: fast and reliable exchange of information, safe traffic and comfortable use of the motorway.
RS5	Baseline 2030	New construction	Construction of the A2 Motorway: section Preljina - Požega	Route 4: this section will facilitate traffic flow on A2 Motorway
RS6	Project	New construction	Construction of the A2 Motorway: section between Požega-Border with Montenegro	Faster connection and more capacity in the north-south axis from Belgrado to Montenegro border, section between Požega—Border with Montenegro
RS7	Baseline 2030	New construction	Construction of the Fruskogorski Corridor: section Ruma - Novi Sad	When complete, the Fruskogorski Corridor will link the Trans-European transport corridors X and IV and provide a shortcut between Bosnia and Romania.
RS8	Baseline 2030	New construction	Route Paracin-Zajecar-Negotin: connection between Corridor IV in Bulgaria to Corridor X in Serbia	Increasing of East-West connections across the Region: construction of new expressway connecting Corridor IV in Bulgaria to Corridor X in Serbia
RS9	Project	New construction	Construction of the Highway R7: section Niš – Merdare	Upgrade to highway standards of the sections Pločnik – Merdare, including construction of a modern cross-border point in Merdare.
RS10	Project	New construction	Construction of highway E-761/ M-5/ Bosnia and Herzegovina Border - Kotroman - Uzice - Kotroman	This project will improve road safety, reduce travel times and increase accessibility
RS11	Project	New construction	Construction of Highway Romanian border - Vršac – Belgrade and connection to Corridor X	This project will improve road safety, reduce travel times and increase accessibility

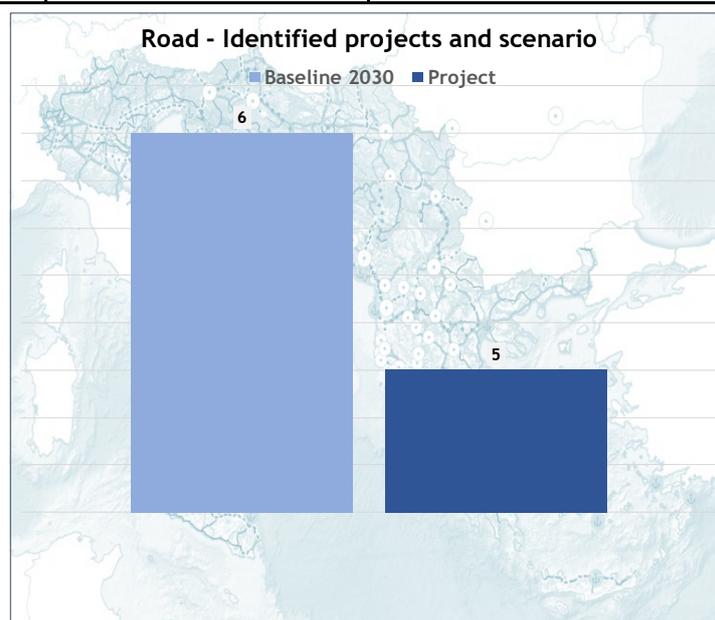


Figure 52 Road projects by scenario, in Serbia

11 road interventions selected in Serbia are now represented in a map in which is possible to recognize functionally classified current road network (primary, secondary, tertiary) and road project classified by scenario.

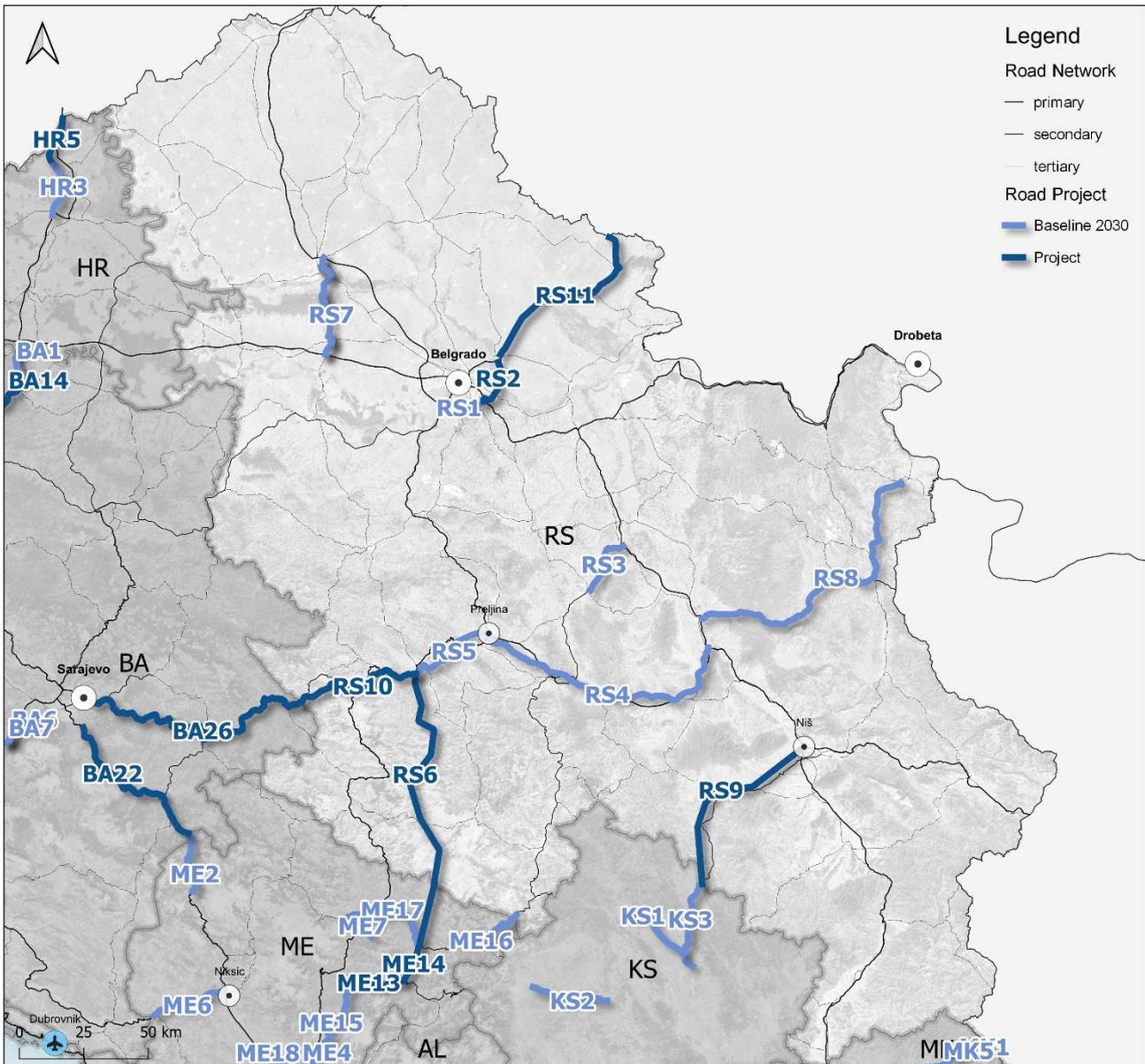


Figure 53 – Map of road project by scenario in Serbia.

2.6 Croatia

2.6.1 National Transport Strategy and Action Plan

“Transport Development Strategy of the Republic of Croatia for the period 2017 to 2030”²⁶ (TDS 2017), shall assess and define the future measures (infrastructure, operation, and organization) in the transport sector related to international and national transport in all transport segments independent from the funding source. The TDS (2017) shall provide the framework for the development of interventions and define the interfaces to other strategies or assessments (Functional Regional Concepts-FRC, Master Plans, sectorial strategies, etc.) The TDS (2017) shall consider the European strategies and requirements (TEN-T, ERTMS, TSI, environmental protection, climate protection etc. – general objectives) and be based on a thorough analysis of the Croatian situation (specific objectives for Croatia).

The TDS (2017) shall be based on a thorough analysis of the transport sector as well as the key drivers for transport development in Croatia (key findings). From the previous assessments done on a strategic level or project level, several hypotheses have been identified, which in case they have been confirmed by data or analysis shall be turned into key findings in case they have not been confirmed by data or the analysis they shall either be dismissed or stay on the level of hypothesis for further investigation. The key findings shall be translated into objectives, which consequently lead to measures around investment, operation, and organization.

2.6.2 Proposed objectives and measures

Transport Development Strategy is based on the analysis of the current situation of the Country having identified opportunities and problems and having analyzed best solutions to accomplish and respond to existing needs. The Strategy is a document which determines a medium and long-term development in the Republic of Croatia and constitutes a positive development in relation to the existing situation and the achievement of a new stage, which consists in increasing the quality of transport system and the transport infrastructure. For that purpose, the definition of accurate objectives is considered a basic and crucial stage of the Transport Development Strategy process.

As a result of EU/CRO policies and EU/CRO strategies the list of **general objectives** was set. Second list is composed of **specific objectives** which are resulting from the analysis of the Croatian transport system. Specific objectives are further divided by the sector to which it refers.

General Objectives (GO)

- GO1 – Developing the passenger Modal Split in favor of Public transport (PT) and 0 emission modes. This includes agglomeration PT (trams, local buses, etc.), rail transport, maritime and inland water PT (boats), regional and long-distance buses as well as pedestrians and bikers.
- GO2 – Developing the freight Modal Split in favor of rail transport, maritime freight transport and inland water transport.
- GO3 – Developing the transport system (operation, organization and infrastructure development and maintenance) according to the principle of economic sustainability.
- GO4 – Reducing the Climate change impact of the Croatian transport system.

²⁶https://mmpi.gov.hr/UserDocsImages/dokumenti/INFRASTRUKTURA/Infrastruktura%2010_19/Transport%20Development%20Strategy%20of%20the%20Republic%20of%20Croatia%202017-2030%2029-10_19.pdf

- G05 – Reducing the impact on the Environment of the Croatian transport system (Environmental sustainability)
- G06 – Improve the traffic safety in the Croatian Transport system.
- G07 – Improve the interoperability of the Croatian transport system (PT, rail, road, maritime, inland water and air)
- G08 – Improve the integration of transport modes in Croatia (operation, ITS, P&R, etc.)
- G09 – To further develop the Croatian TEN-T (core and comprehensive) network.

Specific Objectives (SO)

Specific objectives which apply cross sectorial

- SO – To better harmonize the transport operations with neighboring countries (BiH – Ploče Port, road and rail connections BiH, Slovenia, Serbia, Italy, Montenegro and Hungary)
- SO – To complement the touristic sector development as the main economic factor in some parts of Croatia where relevant, by adequate transport development especially in favor of PT and green mobility
- SO – To improve accessibility to remote areas of Croatia (for example island, Southern Dalmatia...)
- SO – To develop on the potentials of the main logistic centers (Rijeka maritime port, Ploče maritime port, Split maritime port, Vukovar inland port, Osijek inland port, Zagreb hub)
- SO – Strengthening of Croatia as a logistic hub for the wider region with particular focus on Zagreb.
- SO – To improve the integration of the transport sector into the social and economic developments of the regions (Functional Regional Concepts)
- SO – To address the specific situation in Croatia related to the seasonality of traffic.

Road transport:

- SO – To improve the safety of the road system
- SO – To better utilize the Croatian road system for PT (Local, regional and national bus systems)
- SO – To reduce the environmental impact the oldest parts of the Croatian motorway network
- SO - To optimize and harmonize the different tolling systems in Croatia.
- SO - To improve the technical requirements for road design addressing more economic technical solutions, safety standards, green mobility and the integration of 0 emission modes
- SO – To increase the road accessibility of areas, where the existing infrastructure reached the capacity limits and alternative modes (rail, maritime PT) are not economically justifiable (touristic centers in Adriatic Dalmatia) including the introduction of a sustainable traffic concept in favor of PT and 0 emission modes.
- SO – To increase the connectivity to neighboring countries to reach a higher level of cooperation and territorial integration.
- SO – To increase the accessibility of areas in Croatia, where the capacity limits have been reached, and no alternative road infrastructure is existing (parallel motorways etc.) – Zagreb towards Bjelovar and Varaždin towards Koprivnica
- SO – To reduce congestion in heavily burdened agglomerations considering the specific requirements of protection of National Heritage

Measures

Based on the analysis of the current situation and in order to address the defined general and specific objectives, a set of measures has been identified in each sector. The measures propose interventions not only related to improve the infrastructure of the different transport systems but also related to operational and organizational aspects, since isolated interventions on the infrastructure will not have a big impact on the efficiency and sustainability of the system if they are not accompanied by adequate changes in the setup of the system, and the operations are not adapted to the real demand needs.

The following tables show the list of general measures and measures per transport sector including a detailed description of the measure to facilitate the understanding of their content.

To distinguish between group of measures, taking into account their alignment with the Transport Development Strategy objectives, the following color code, which is included as well in the tables below, has been defined:

- Green label: Duly aligned with the strategy; the measure is needed and well defined, even if some further studies might be necessary.
- Yellow label: Missing data to determine the duly apparently alignment with the Strategy; some further studies are required to assess or verify the eligibility of the measure.
- Red label: Non-aligned with the Strategy; the eligibility is remote in terms of current and mid-term traffic forecasts. If the new studies confirm the eligibility of this investment, the measure will be reviewed.
- Blu label: Measure covered by general measure.

Table 81 General measures

Code	General measure	General measure description
G.1	National logistic concept for freight	Croatia should define a national concept for freight logistics involving all modes of transport. It is very important to define a role for, among others, ports Rijeka and Ploče and Zagreb node. A specific study needs to be developed involving all relevant stakeholders. As generally speaking the Croatian Transport system has large unused capacities available, it should be assessed whether shifting of traffic from other countries - where bottlenecks have been identified for example Italy - is feasible.
G.2	Improvement of the public transport accessibility for the international airports	Accessibility of the airports by public transport is not adequate. Individual solution should be found for each airport taking into account specifics. Solution should be assessed in the context of the functional region master plan and taking into account potential functionality of connections such as connectivity of Velika Gorica with Zagreb, Trogir with Split,...



Code	General measure	General measure description
G.3	Improvement of safety in transport system	<p>As safety is one of the main objectives of the TDS it is necessary to improve it in all modes of transport system.</p> <ul style="list-style-type: none"> • To increase the level of safety of the railway system specific measures such as removal of level crossings (if justified by the traffic flows). If there is justification to denivelate or eliminate a rail-road crossing, it is necessary to assure it with adequate safety devices. In order to increase safety at level crossings it is necessary to develop and implement educational marketing campaigns in order to raise awareness of drivers of road vehicles. • In terms of road safety, the Commission has set as its overall objective that the number of fatalities needs to be moved to zero by 2050. To improve road safety in Croatia, the following measures should be developed: <ul style="list-style-type: none"> ◦ Integrate road safety in all the stages of project implementation via road safety impact assessments which will demonstrate, on a strategic level, the implications on road safety of the different alternatives of an infrastructure project and they will play a relevant role in the selection of the routes and final alternative. At a more advanced stage of the project phase, during construction and operation, road safety audits should identify, in a detailed way, unsafe features of a road infrastructure project and propose corrective measures. ◦ To reduce the negative impacts of accidents, the procedures to be followed in case of accidents will be reviewed and improved to reduce the response time. The information channels will be as well improved and simplified and the situation on the black spots will be monitored. • In order to develop the maritime sector in a safe and sustainable manner it is necessary to increase the share of energy-efficient vessels by modernization of the fleet and to improve public service of search and rescue at sea. The goal is to constantly raise the efficiency of the system of control over vessels and floating facilities. It is also necessary to establish an effective monitoring system of recreational craft and smaller passenger and cargo ships. Security of ports and waterways need to be enhanced by investments in the objects of navigational safety, security devices and equipment, ensuring the necessary depth in the port area and defining the conditions of navigability of waterways. It is necessary to develop a system of targeted inspections and technical inspections on maritime facilities and vessels in order to establish the highest international, European and national safety standards. • To raise up the safety level on waterways to a higher level, besides the implementation of the River Information Services and the availability of timely and accurate information regarding the movement of vessels, it is necessary to establish clear procedures regarding the actions



Code	General measure	General measure description
		<p>which should be taken in cases of incidents, as well as upgrading the existing systems of marking and monitoring the navigability of the inland waterways. For safety reasons, it is also necessary to modernize and upgrade the ports with safety systems. For a more effective safety control and inspection, and installation and maintenance of signalization system on waterways, it is necessary to increase the fleet of safety and environmental protection vessels.</p> <ul style="list-style-type: none"> • Safety and security in urban areas should be improved at least on two different levels: <ul style="list-style-type: none"> ◦ Identifying and eliminating black spots such as rail-road crossings, signalling pedestrian crossings, providing additional protection to pedestrians and cyclists by constructing new pedestrian footpaths and bike paths where needed, constructing pedestrian islands to minimize crossing distances, extending curbs where necessary and even construction of new pedestrian sidewalks / footpaths to improve the accessibility to the main public transport stations and terminals. ◦ The rolling stock and vehicles for public transport will be modernized. Procurement of new public transport vehicles that comply with the highest safety and quality standards is a priority. These vehicles are to incorporate the latest advances in safety and control and surveillance devices (e.g. video cameras). The infrastructure and stations will also be modernized with the necessary adaptations to increase safety and accessibility to the public transport and with the installation of surveillance and control devices to improve the security.
G.4	Improvement of passenger intermodality and development of intermodal passenger hubs	<p>To ensure the sustainability of the transport sector as a whole, it is important to increase the interoperability to be able to use the potential of each transport mode. A network of intermodal terminals should be established to allow the passengers to easily interchange between transport modes. A well-conceived, balanced, intermodal network is key to maximizing the efficiency of the overall system, minimising nuisances to users. Location and modes of each terminal will be determined according to a specific area study (e.g. Masterplan).</p> <p>In the road sector it is important to ensure the proper accessibility to demand generation/attraction nodes (such as ports, airports, railway stations, working areas, commercial zones, etc.). An increase in the number of parking spaces linked to public transport systems, port and airports will help to increase the modal shift in favour of public transport and consequently reduce the congestion on the roads.</p>
G.5	Maintenance concept for different transport sectors	<p>Owner of the national infrastructure should have maintenance concept which would ensure long term sustainability of different modes. Adequate structures and organisation for maintenance must be put in place in order to provide an efficient and effective/sustainable rail service. The concept must derive from an appropriate and specific analysis of the Croatian and HZ Infrastructure Ltd. context, taking into account technical, financial and users' requirements, the indications from Directive 2008/57/EC on the interoperability of the rail system and the main international standards related to RAMS.</p> <p>Road maintenance is essential in order to preserve the road in its originally constructed condition, protect adjacent resources and user safety and provide efficient, convenient travel along the route. For efficient and effective/sustainable maintenance, adequate structures and organisation for maintenance must be put in place. The concept must derive from an appropriate and specific analysis of the Croatian and relevant stakeholders context, taking into account technical, financial and users requirements.</p> <p>The concept of maintenance in maritime sector can be divided into: maintenance of ports and port infrastructure, and maintenance of shipping</p>



Code	General measure	General measure description
		fleet. Adequate structures and organisation for maintenance must be put in place in order to provide an efficient and effective/sustainable maritime transport service. The concept must derive from an appropriate and specific analysis of the Croatian and maritime operators context, taking into account technical, financial and users requirements.
G.6	Improve energy efficiency in transport system	Promoting the efficient and sustainable use of the infrastructure is one of the priorities for infrastructure development according to the guidelines for development of the Trans-European transport network. In this sense, it is necessary to improve energy efficiency and prioritise low carbon energy sources and propulsion systems. Further studies will analyse specific requirements.
G.7	Reorganization of the transport system to increase financial sustainability	Public Service Contract(s) in compliance with EU Reg. 1370/2007 are a fundamental tool to assure transparency and efficiency in the provision of public transport services. A widespread implementation of PSCs is therefore required not only for compliance purposes, but also as a first step towards an improvement in sustainability of Croatian's transport system. Typology and duration of the PSC will have to be determined on a case-by-case analysis, together with the applicability of the in-house model (either based of pure compliance issues or after a thorough assessment of technical and financial requirements). Increasing financial sustainability is one of the objectives of the Trans-European transport network. To achieve this objective it is necessary to optimise the organisational setup of the transport systems and to increase the efficiency of the operation and maintenance. Financial sustainability of the transport system intends to reduce the dependence of the system on public subsidies.
G.8	Harmonization of legislatives and planning guidelines taking into account relevant EU requirements and policies	Legislation and planning guidelines must support the development of the sector and should be in line with international best practice and European regulations, especially regarding safety, security, interoperability, sustainability and environment. The overall legal framework should be harmonized to facilitate the implementation of major infrastructure projects. In all laws and regulations certain procedures need to be simplified and the definitions harmonized.
G.9	Preparation and adaptation to Schengen requirements	Future scenarios of Croatia and surrounding countries entering the Schengen area will increase the relevance of international traffic. The adaptation of the transport systems requires the elimination of infrastructure and administrative bottlenecks. Elimination of bottlenecks with non-Schengen surrounding countries will help in increasing the relevance of international traffic on certain corridors with international connections. Specific studies will assess on the technical requirements to be met in each specific case.
G.10	Increase administrative capacity/training	The lack of administrative capacity and the properly trained staff is one of the key issues identified in the transport sector and is one of the priorities in the EU cohesion policies. The implementation of new technologies and increasing requests for the control of traffic and means of transportation implies the necessity to train the existing and new staff in accordance with their specific needs.
G.11	Improvement of the public perception of the transport system in Croatia	Promoting and creating a positive image of the public transport system as a reliable, safe and environmentally friendly mean of transport is important for encouraging the demand, and consequently the investments. For better promotion, it is necessary to have complete and up to date information and knowledge of the infrastructure, possibilities and development plans. In the road sector is very important to inform users of the current situation of the traffic and weather conditions to reduce the amount of traffic jams and accidents by offering information's on alternative routes. It is also important to inform drivers of amendments to the existing or adoption of new laws in the sector relevant for the users and to provide instant information on the motorways of the incidental situations that might require changes in the allowable speed or restrictions to the use of lanes. For that reasons, the need to constantly revise and update the information



Code	General measure	General measure description
		<p>technologies and channels is very relevant for the improvement of the sector. It is important as well to increase the involvement of the media as a crucial partner for the transmission of the information.</p> <p>In the maritime transport sector, it is necessary to continuously modernize and integrate IT platform in order to ensure reliable and comprehensive data and information for all users. It is also necessary to establish network services of e-business for all users of public services, to establish a unique port information system in ports in order to improve business processes and raising the competitiveness of ports, to establish hydrographic information system, to improve services maritime meteorology, to develop ICT solutions for operation with emergencies at sea and to improve and to develop the nautical information service as public and free services of safe navigation of boats and yachts.</p>
G.12	Reduce environmental impact of transport	<p>Based on the environmental monitoring, negative environmental and socio-economic impacts of the transport system should be reduced by effective planning/implementation of the infrastructure and the establishment of the necessary measures of environmental protection. Mitigation of the negative impact of transport on the environment must be achieved through greater energy efficiency, in particular, the use of energy sources with low or zero emissions of hydrocarbons and reducing noise emissions and the amount of continuous pollution and waste.</p> <p>To prevent pollution of the Adriatic Sea with maritime facilities and vessels it is necessary to renew and modernize the fleet cleaner, to ensure the availability of services, equipment and devices for operational activities, particularly for interventions in case of large scale marine pollution. It should also provide the conditions for sustainable and accessible service of reception and disposal of ship generated waste and cargo residues in accordance with international and EU regulations and strengthen supervision of the Ballast Water Management on the basis of a risk assessment and in accordance with internationally agreed guidelines. Timely response to combat sea pollution is of particular importance, given that sea pollution could have far-reaching consequences.</p>
G.13	Adaptation and mitigation of climate change	<p>The development of the transport sector in Croatia should be done taking into account the need to reduce the CO2 emissions and thus mitigating the impact of transport on climate change.</p> <p>At the same time, transport infrastructure and operations should be developed taking into account the potential effects of climate change and weather extremes on them.</p>
G.14	Improvement of data collection	<p>For further development of the transport sector, it is necessary to have "up to date" data. It is necessary to improve and simplify the data collection, in order to increase the accessibility of data.</p>
G.15	Improvement of interoperability with neighbouring countries	<p>Improvement of the interoperability of the Croatian transport system, in all the sectors, with the neighbouring countries is very important to ensure the proper connectivity and consolidate the role of Croatia as a transport hub for the Western Balkans and thus, increasing the transport demand in Croatian territory.</p> <p>Harmonisation of the technical standards in the different sectors and simplification of the procedures at the border crossings with Schengen and non-Schengen countries, are examples of the tasks to be undertaken.</p> <p>Specific studies are necessary in each sector to identify the bottlenecks and propose solutions.</p>

Table 82 Road transport measures

Code	Measure	Alignment	Measure description
ROAD TRANSPORT			
Road network elements			
Ro.1	Gradiška bridge connection		Gradiška bridge over the river Sava is a part of the road corridor HU border - Virovitica - Okučani – BiH border (Stara Gradiška). This road is located in the corridor of the existing D5 road, being the bridge part of international agreement between Croatia and Bosnia and Herzegovina. The Republic of Bosnia and Herzegovina has already finished the motorway from Banja Luka (B&H) to Gradiška, however, the planned bridge is required for the connection of the motorway from Bosnia and Herzegovina to the existing Zagreb – Lipovac Motorway (A3). GP Gradiška is one of two major border crossings between the Croatia/EU and Bosnia and Herzegovina for all types of traffic.
Ro.2	A5 Osijek - HU border Pecs (comprehensive/Vc)		The A5 motorway is a part of the comprehensive TEN-T network and Pan-European corridor Vc. The total length of the A5 motorway is 88.6 km and it goes from the Bosnia and Herzegovina border towards Osijek, Beli Manastir to the Hungarian border. For the purpose of connecting the constructed sections of the A5 with the Hungarian motorway, it is necessary to build up sectiona Osijek - Beli Manastir (24.6 km) and Beli Manastir - Hungarian border (5 km). The construction of the Bridge Drava (length 2.5 km), the most important infrastructural facility on the motorway A5, section Beli Manastir – Osijek, have already started and is in the final stage. The construction of the motorway section from the bridge Drava to Osijek (length 3.8 km) is in progress. Functional Region Concept will analyse the phasing and timing of the remaining sections, as well as the required technical parameters, taking into consideration the expected demand and economical and environmental aspects, e.g. the planned section passes through some "Natura 2000" areas.
Ro.3	A5 from A3 to BiH border (comprehensive/Vc)		The A5 motorway is part of the comprehensive TEN-T network and corridor Vc, being Svilaj included in the list of border crossing points of the EU core network. The total length of motorway A5 is 88.6 km and it goes from the Bosnia and Herzegovina border towards Osijek, Beli Manastir to the Hungarian border. The section from Sredanci (motorway A3) to the B&H border is 3.5 km long and is under construction. The section includes a bridge over the river Sava (660m in length). The continuation on the BiH side is already constructed.
Ro.4	A7 Križišće to Žuta Lokva (comprehensive/Adriatic Ionian corridor)		The outcomes of the NTM show that there are some capacity issues in this corridor, mainly during the summer season and linked to local/regional traffic (including short distance movements from tourists in the area). Due to that, some interventions in this corridor might be necessary to improve the level of service. The Functional Regional Concept will identify the problems in more detail and further specific studies will define the required technical parameters, taking into consideration the expected demand and economical and environmental aspects, especially orographic features due to very complex coastal relief terrain.



Code	Measure	Alignment	Measure description
Ro.5	A11 Lekenik - Sisak		The A11 motorway (Zagreb – Sisak), with total length of 41.9 km is divided into three sections: Jakuševac – Velika Gorica jug (10,9 km), Velika Gorica – Lekenik (20,2 km) and Lekenik – Sisak (10,8 km). Two of them, Jakuševac – Velika Gorica jug and Velika Gorica – Lekenik, with total length of 31.1 km, were already built. The Functional Region Concept will analyse whether further development of the motorway to Sisak is necessary. In such case, specific studies will define the phasing and timing of the remaining sections in the light of intermodality, as well as the required technical parameters, taking into consideration the expected demand, tolling concept and economical and environmental aspects. The Functional Regional Concept will assess on the phasing and timing of the remaining sections.
Ro.6	DC 10 Vrbovec - Križevci - Koprivnica - Hungarian border towards Kaposvar		The DC10 State road was previously categorized as a motorway, the A12. The A12 motorway is a partially built motorway in central Croatia, northeast from Zagreb, extending towards the city of Vrbovec. A 23 km dual carriageway exists between the A4 motorway and Sveta Helena. The DC10 represents the western arm of the so-called "Podravina Y", as the eastern arm is planned to be the DC12 and will finally connect Zagreb with the Hungarian border towards Kaposvar. The corridor is divided into several sections and the stage of project documentation (project design and permits) varies from section to section. Functional Region Concept will assess on the phasing and timing of the remaining sections, as well as the required technical parameters, taking into consideration the expected demand and economical and environmental aspects.
Ro.7	DC 12 Vrbovec 2 interchange - Ivanja Reka - Vrbovec - Bjelovar - Virovitica - Hungarian border towards Barcsu		DC12 represents the eastern arm of the so-called "Podravina Y", as the western arm is planned to be the D10 and will finally connect Zagreb with the Hungarian border towards Pecs. Only the Vrbovec 2 interchange, the starting (western) terminus of the D12 has been completed. The rest of the corridor is divided into several sections, and the stage of project documentation (project design and permits) varies from section to section. The Functional Regional Concept will assess on the phasing and timing of the remaining sections, as well as the required technical parameters, taking into consideration the expected demand and economical and environmental aspects. Further development of the project should be coordinated with HU authority.
Ro.8	Zagreb main network reorganization		agreb is the capital of Croatia and the interchange of main road corridors. Currently all the motorway corridors are connected through the Zagreb bypass, the road with the highest traffic load in Croatia. The main road network inside the city should be reorganised as well taking into account the outcomes of the Functional Region Concept.
Ro.9	D2 from SLO border to SRB border		D2 is the existing state road for transit traffic in the northern areas of Croatia, and spans from the border crossing with Slovenia at Dubrava Križovljanska in the west via Varaždin, Osijek, Vukovar, ending at the Ilok–Bačka Palanka Bridge border crossing to Serbia. Most of the D2 route runs parallel to the Drava River (Podravska magistrala). Relevant intensity of very

Code	Measure	Alignment	Measure description
			high heavy traffic is affecting the features of the existing lanes and thus the level of safety is clearly decreasing. A new corridor for the D2 is planned but Functional Region Concept will assess on the phasing and timing of its development, as well as the required technical parameters, taking into consideration the expected demand and economical and environmental aspects. The outcomes of the NTM show that there are capacity issues in several sections of this road.
Ro.10	Rijeka network reorganization		<p>The Rijeka road junction is one of Croatian main traffic junctions and plays an important role in linking the Croatian motorway network: A7 motorway links A8 motorway (Istrian Y) and A6 motorway (Rijeka – Bosiljevo). The Port of Rijeka is the main Croatian port (core port), and the development of the port must be harmonised with the road development. The planned west container terminal in Rijeka port will be connected with the planned state road D403, the feasibility of which has been proven and accepted in a specific FS. The Rijeka bypass is part of the A7 motorway, being one of the roads in Croatia with the highest traffic intensities.</p> <p>All these measures must be coordinated with the reorganisation of the internal road network in the City of Rijeka taking into account the necessities for public transport and soft modes, the development of the port and the development plans of other relevant stakeholders such as the railway company. For that reason, further analyses through Functional Region Concept are necessary to define the final set of interventions as well as the required technical parameters, taking into consideration the expected demand and economical and environmental aspects.</p>
Ro.11	Dubrovnik - MNE border		The Corridor Dubrovnik – MNE border is at different stages of development per sections. The development would bypass the Dubrovnik airport. Functional Region Concept will assess on the phasing and timing of its development, as well as the required technical parameters, taking into consideration the expected demand and economical and environmental aspects.
Ro.12	Increase of capacity - dedicated PT lane between Zagreb and Karlovac		<p>Road corridor from Zagreb to Karlovac is included in the EU core network because of international and regional relevance of the traffic coming from Rijeka to inland. Section Zagreb – Karlovac is one of the oldest part of motorway network in the Croatia with quite low environment standards. According to feasibility study capacity limitations are caused by existing tolling system and the need for a capacity increase has not been proven as necessary in the medium-term horizon. The potential change of the tolling system, see measure Ro.18, would have a clear impact on this road section.</p> <p>Specific interventions to increase the safety and environmental standards of this section could be justified.</p>
Ro.13	Increase of capacity - dedicated PT lane Zagreb bypass		The Zagreb bypass is the busiest traffic route in Croatia and the level of traffic is constantly increasing. Some sections of the Zagreb bypass need upgrade with a new PT lane. Functional Region Concept will analyse the existing options to increase the capacity, assess on the phasing and timing of its development, as well as the required technical parameters, taking into consideration the expected demand and economic, social and environmental aspects, as well as the developments planned in other modes of transport.



Code	Measure	Alignment	Measure description
Ro.14	Slavonski Brod port access improvement		Slavonski Brod, as the main port on the river Sava, is the only inland port in Croatia in the Sava river included in the list of nodes of the EU core network. The development of the port and the additional business zone must be coordinated with the improvement of other transport infrastructure, especially road. The NTM shows that there is no accessibility issue.
Ro.15	Split network reorganization		Split is one of the main centres of tourism in Croatia. Of special relevance for the road network is the tourism linked to the cruises as it creates a heavy seasonal burden on the road network. It is necessary to reorganise the road network in Split taking into account as well the public transport system and planned developments in the city, the port and other relevant transport systems such as rail. One of the potential measures is the Split bypass: Trogir – Split – Omiš which has been planned for regional and local traffic, being several sections at different stages of development. Functional Region Concept will define the final set of interventions as well as the required technical parameters, taking into consideration the expected demand and economical and environmental aspects.
Ro.16	Preparation for accessibility of Dubrovnik when Croatia joins Schengen (Pelješac bridge)		Long distance accessibility will be mainly solved through the airport connection in the mid-term scenario but for the local and regional needs and for freight transport, the bridge „Pelješac“, in combination with local road network on Pelješac and a bypass of Ston need to be constructed. This will not only serve the purpose of accessibility of Dubrovnik and further to Monte Negro, but also the accessibility of Pelješac Peninsula as well as Korcula.
Ro.18	Reconsideration of tolling system in Croatia		Tolling system in the Republic of Croatia is mostly under jurisdiction of four different concessionaires with different ways of charging the toll. Unique way of charging is needed. Further study will analyse the full range of existing options, as well the possibility of introduction of EETS or EU vignette.
Road network			
Ro.19			
Ro.20	Secondary and tertiary road rehabilitation and realignment		To ensure the cohesion of the territory and provide the proper accessibility to the high-level network, the status of the existing secondary and tertiary roads will be analysed to identify the needs for their rehabilitation. The main problem affecting these categories of roads is lack of maintenance and funding. It is necessary to provide the conditions for proper maintenance, especially taking into account the existing and forecasted levels of traffic on these roads. The Functional Regional Concepts will identify the development needs for these roads and specific studies will define the required technical parameters, taking into consideration the expected demand, tolling concept and economical and environmental aspects.
Ro.21	Develop a resting station concept for the high level road network		According to EU Directive 2008/96/EC, sufficient roadside parking areas are very important with regards to road safety. Parking areas enable drivers to take breaks and continue their journey with full concentration. The provision of sufficient safe parking areas should therefore form an integral part of road

P



Code	Measure	Alignment	Measure description
			infrastructure safety management. While some service facilities along the motorways and fast roads have been built, the number is still not sufficient, given the increase in traffic, especially during the tourist season. Additionally, Directive 2010/40/EU states that it is necessary to improve infrastructure for secure parking for trucks and buses. At the same time, renewal of the old parking lots with other facilities (gas stations, restaurants, toilets, playgrounds), is planned.
Ro.22	Traffic management, monitoring, traffic counting and information system		New technologies must be introduced to improve methods and ways of gathering information to ensure that the traffic management information collected has the content and quality required at international level. New technologies allow among others for real time data gathering and control of traffic conditions. In order to take advantage of these new technologies, the need for new centres for centralized management of the traffic, equipped with the latest advances in ITS solutions, will be analysed. Traffic management and monitoring is of special relevance to manage incidental situations and traffic jams in the peak traffic seasons. This will allow for a qualitative improvement in the planning and monitoring of alternative routes, passenger user information, traffic control and real time data gathering regarding congestion.
Ro.23	Interchange development plan		In order to improve the connectivity of the high level road network, it is necessary to develop an interchanges development plan. The plan will take into account the functionality of each road to identify the number and location of interchanges to avoid for example excessive amounts of local traffic in long distance corridors which might endanger the level of service. Specific seasonal requirements due to the touristic season will be considered as well. New tolling system should be proposed and evaluated.
Ro.24	Road safety		Covered by the general measure G.3
Ro.25	Network development to intermodal hubs, agglomerations in line with demand		Covered by the general measure G.4
Ro.26	Improve interoperability (intermodal hubs, P&R, etc.)		Covered by the general measures G.4 and G15
Ro.27	Reduce environmental impact		Covered by the general measures G.12 and G.13
Ro.28	Energy efficiency		Covered by the general measure G.6
Road operation/organization			

Code	Measure	Alignment	Measure description
Ro.29			
Ro.30	Increase administrative capacity/training		Covered by the general measure G.10
Ro.31	Preparation/adaptation for Schengen borders		Covered by the general measure G.9
Ro.32	Preparation/adaptation of non-Schengen borders		Covered by the general measure G.9
Ro.33	Improve financial sustainability of the road network and tolling system		Covered by the general measure G.7
Ro.34	Information platforms		Covered by the general measure G.11
Ro.35	Recategorization of the road network		It is necessary to develop a study to analyse the need to recategorize the road network to adapt to the real demand and functionality of each road to increase the efficiency and sustainability of the system.
Ro.36	Enforcement		In the White Paper on European transport policy for 2010: time to decide the Commission has set as its overall objective in terms of road safety that the number of fatalities needs to be moved to zero by 2050. It appears from research that enforcement is an important and effective way of preventing and reducing accidents, deaths and injuries, but enforcement actions are only optimally effective if they are combined with actions to make the public aware of such enforcement actions and of the reasons why they are being held. Further studies will assess on specific actions both in public awareness, enforcement and cross border information management.
Ro.37	Improvement of data collection		Covered by the general measure G.14

2.6.3 Summary of Road Transport Projects

Considering the analysis of the current transport system (the analysis carried out in the first paragraph), the main existing strategic documents for the area in terms of infrastructure and mobility development and the results of the analysis of existing National and international Strategic Plans presented in the previous paragraph of the volume, are now defined the most relevant road projects classified with respect to the state of progress and the main objective. Following list of selected interventions also constitutes a geographical database.

The table below includes the road infrastructural projects identified in the country and characterized by type of project (upgrade or new construction), main goal of the intervention and the belonging scenario (baseline

2030/2040, or project). The Baseline scenario has been defined by selecting the main ongoing and planned projects in the Region with a national/regional relevance, and very mature projects whose implementation is already planned and financed. Project scenario describes interventions which are included in a plan/program/strategy but still not financed or not entirely financed.

Table 83 Road projects in Croatia

ID	Scenario	Object	Name	Main goal
HR1	Baseline 2030	New construction	Construction of Croatia's Istrian Y motorway: section Pazin-Ucka	Elimination of a missing link
HR2	Baseline 2030	New construction	Construction of Ucka tunnel	necessary to meet the minimum safety requirements
HR3	Baseline 2030	New construction	Construction of road Osijek - Beli Manastir	Completion of a road section of comprehensive network
HR4	Baseline 2030	New construction	Construction of the Pelješac bridge	Linking Croatia's Peljesac peninsula with the rest of the country
HR5	Project	New construction	Construction of road A5 Osijek - HU border	Completion of a road section of comprehensive network
HR6	Baseline 2030	New construction	Construction of road A7 Križišće to Žuta Lokva: section A7 Rupa - Rijeka - Žuta Lokva	The construction of the section of the AC will enable the development of tourism in Crikvenica-Vinodol area as well as quality and better transport links with Senj, Rab and Dalmatia.
HR7	Baseline 2030	New construction	Construction of road A11 Lekenik – Sisak	Faster connection and more capacity from Zagreb to Sisak
HR8	Project	New construction	Construction of road road DC 10 Vrbovec - Križevci - Koprivnica - Hungarian border towards Kaposvar	Faster connection as part of the DC10 road

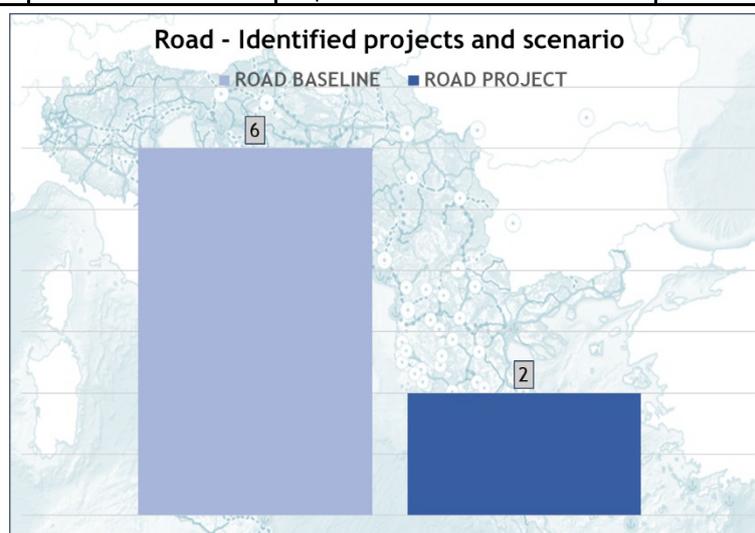


Figure 54 Road projects by scenario, in Croatia

8 road interventions selected in Croatia are now represented in a map in which is possible to recognize functionally classified current road network (primary, secondary, tertiary) and road project classified by scenario.



Figure 55 – Map of road project by scenario in Croatia.

2.7 Slovenia

2.7.1 National Transport Strategy and Action Plan

In Slovenia Transport Strategy is represented by the document: “Transport Development Strategy of the Republic of Slovenia Until 2030”²⁷. The best possible transport system of a country is one of the fundamental conditions for its efficient operation, since it provides for the implementation of the other country’s policies, it is regarded as a precondition for economic development. The transport policy vision is thus a part of a common vision of a country and a necessary condition for its operation. It is defined as the provision of sustainable mobility for the population and supply to the economy. The definition derives from basic traffic and transport activity, which is moving or transferring people, goods and information in space and time. The word “provision” means that a country will ensure the sustainable mobility of the population and sustainable supply to the economy by transport policy measures. The word “sustainable” relates to the efficient operation of a transport system which functions at the intersection of environmental, social and economic aspects.

Measures at the intersection of environmental and economic aspects are implementable, but not necessarily socially acceptable; measures at the intersection of social and economic aspect are just, but not necessarily environmentally acceptable; measures at the intersection of the environmental and social aspect are tolerable, but not necessarily economically acceptable. The vision of transport policy strives to implement such measures which will provide the sustainable mobility of the population and sustainable supply to the economy.

To develop the national road network to a level comparable to the situation in the European Union, Slovenia will have to adopt certain systemic solutions related to the provision of earmarked funds for implementing the priorities of road development and maintenance measures. Quality road infrastructure is one of the fundamental conditions for harmonized regional development, providing the best conditions for efficient economic operations and indirectly for the settlement of suitable areas in the country. Therefore, it is necessary to further develop the national road network (construct the best road network, as well as maintain and upgrade the existing road network at the proper level). However, to provide harmonized regional development -Economist as well as spatial development – for interconnecting regions, improving transport services qualities and eliminating insufficient traffic throughput, lowering transport costs, improving traffic safety and reducing the negative impacts of transport on the environment, it is also necessary to implement some further measures, which have to include those development projects at the level of national roads which on the basis of preliminary study, project and investment documents, whose execution will achieve such savings for national road users and residents in their vicinity that they will be economically justified. These are mainly projects related to new road construction, and the reconstruction of existing roads and bypasses which cannot be executed with the budgetary means.

2.7.2 Proposed objectives and measures

The general objectives of transport policy which ensure that the vision is realised are determined on the basis of the vision. General objectives are:

- improve mobility and accessibility;

²⁷ <https://www.gov.si/assets/ministrstva/MzI/Dokumenti/Transport-Development-Strategy-of-the-Republic-of-Slovenia-Until-2030.pdf>

- improve the supply to the economy;
- improve traffic safety and protection;
- reduce energy consumption;
- reduce costs to user and operators;
- reduce environmental burdens.

The last objective (the reduction of environmental burdens) is also crucially related to the objective of reducing the burden of diseases caused by inadequate transport pursued by the Ministry of Health. Therefore, the measures defined on the basis of this objective will also include the area of health.

Objectives are harmonized with the objectives of the TEN-T ordinances on the technical specifications for interoperability in terms of the “infrastructural” subsystem of the Pan-European railway system for conventional speeds (2011/275/EU): the Commission's Decision of 26 April 2011 on a technical specification for interoperability relating to the “infrastructure” subsystem of the Pan-European railway system for conventional speeds (notified under document C (2011) 2741)).

Special objectives - road

- reduction of travel times between regions;
- elimination of bottlenecks or low traffic flow;
- provision of higher traffic safety by eliminating congestion points of traffic accidents and implementing applicable national and EU legislation;
- provision of an adequate and interoperable mode of toll service, pursuant to EU legislation;
- improvement of the situation of the parallel national road network through planned management (maintenance and investments in the construction of new sections and bypass roads of settlements), where necessary;
- provision of adequate traffic areas for non motorized participants in traffic by upgrading the existing network of cycle routes;
- provision of adequate and secured parking lots at the motorways, approximately at every 100km;
- provision of the infrastructure for alternative fuel;
- provision of arranged and safe PPT stations and stop facilities.

Measures

On the basis of the specific objectives, the measures are defined, which are divided into general measures and measures relating specifically to rail, road, public passenger transport, air and sea transport and urban centers. Measures are not represented at the level of concrete projects, but at the level of identified needs (at the level of strategic level).

Below is displayed the description of the measures for achievement of specific projects objectives according to the road transport area.

Table 84 Description of measures on road transport

Harmonisation with the Transport Development strategy/ Code	Measure	Description of measure
Road transport		
Road network elements		
Ro.1	Draženci – Gruškovje (HR) motorway	The section is a part of the comprehensive TEN-T network. Several years ago, the motorway section was constructed between Slivnica pri Mariboru and Draženci near Ptuj. The conditions of the current road network in 2030 were analysed, i.e. during the afternoon rush hour on an average working day and in a tourist peak period. It was established that the throughput will be exceeded in 2030. This is mainly an issue of increased traffic in the tourist season, since transport between Ptuj and the Slovenian-Croatian border takes place on a two-lane main road. Major congestion occurs at that time, which imposes an additional burden on the environment. The measure includes the construction of new motorway, since it is the only motorway section lacking between Maribor and Zagreb (13 km in length) which still to be built. Measure R.33 must be taken into account when siting and designing.
Ro.2	Completion of the Karavanke motorway tunnel	The section is a part of the comprehensive TEN-T network and is now constructed as a half motorway, causing poorer transport flow. In the current arrangement, the throughput during increased traffic volume with congestions is problematic. Jams a few kilometres long occur on certain days. For safety reasons, access for haulage vehicles is limited, or access to the tunnel is controlled. Traffic volumes are also growing annually, thus additionally increasing the extent and number of days with congestion, which is problematic for users (congestion, environmental burdening) and the tunnel manager (provision of safety). No other alternative exists to a single-tube tunnel than to construct an additional tube and renovate the existing one (the first tunnel tube), which will provide a full profile four-lane road. This will also improve traffic safety, which will fulfil the requirements of the directive on safety in tunnels (Directive of the European Parliament and of the Council, No 2004/54/EC of 29 April 2004 on minimum safety requirements for tunnels in the Pan-European road network). Measure R.33 must be taken into account when siting and designing.
Ro.3	Development of the concept of rest/parking areas on the motorway network and arrangement of areas on former international border crossings	In Article 19, the TEN-T Regulation defines the priorities of Member States with regard to the development of road infrastructure. It also foresees the provision of adequate parking areas for commercial users and thus certain levels of safety and protection. Information support should be provided with regard to the number of available and free parking spaces in car parks and for better use of existing car parks (ITS). By expanding existing car parks or the construction of new ones, if necessary, additional capacity must also be provided. The result of the accession of the Republic of Slovenia to the EU and the adoption of the Schengen regime on its borders is that border posts have to be rearranged or other functions have to be allocated to them. Within the scope of the measure, it is necessary to prepare an examination and analysis of border points, establish their needs, define their new, changed function and prepare reorganisation projects for these areas. Measure R.33 must be taken into account when siting and designing.
Ro.4	Connecting Bela Krajina with Novo Mesto	Bela Krajina has poor connections with regional centres, or their access is poor due to low speeds and weather conditions. With better accessibility, the possibility of future development and adequate connection of regions in terms of the economy and society will be provided. Accessibility through Gorjanci must be improved in this area in winter conditions. The proper standard of accessibility to centres of regional importance as well as to core centres and the core or comprehensive transport network has to be provided. The measure foresees the preparation of a project which includes the actual needs of the transport system. It is foreseen that the existing transport infrastructure will be used and reconstructed or upgraded to the greatest extent possible. Only in certain cases or locations where a suitable standard cannot be provided on the existing infrastructure it is possible to prepare a project outside it. Measure R.33 must be taken into account when siting and designing.
Ro.5	Novo Mesto city Network	The situation on the current 2030 road network during afternoon rush hours on an average working day was analysed. Traffic congestion and jams occur on certain sections of the network, and thus related excessive emissions in the residential environment. The prevention, reduction or mitigation of environmental impacts, particularly in residential environments due to activities related to traffic are among the main strategic objectives. The measure anticipates the construction of a bypass to create suitable throughput capacity for long-distance and origin-destination traffic in the city. The measure also improves conditions in the residential environment. Measure R.33 must be taken into account when siting and designing.



Harmonisation with the Transport Development strategy/ Code	Measure	Description of measure
Ro.6	Connection of Bohinj and Bled to Ljubljana	The situation on the current 2030 road network during afternoon rush hours on an average working day was analysed. Traffic congestion and jams particularly between the motorway and Bled. This is especially true during the tourist season or rush hours at weekends. The measure foresees the reconstruction of the existing road, which will provide the proper conditions for traffic flow for long-distance transport and for source-target city traffic, and the construction of the southern Bled by-pass. The measures also improve conditions in the residential and natural environment. The possibility of improving accessibility to public passenger transport (existing rail connection, alternative modes of transport, ITS, etc.) must be studied. Measure R.33 must be taken into account when siting and designing.
Ro.7	Connection of Predel, Bovec, Tolmin and Cerklno to Ljubljana	Some areas of Goriška have poor connections with regional centres, or their access is poor due to low speeds and weather conditions. Thus, better possibilities for future development and the adequate economic and social connection of regions will be provided. The road over Vršič in winter is also a problem, and should be addressed. The proper standard of accessibility has to be provided to centres of regional importance as well as to core centres and the core or comprehensive transport network. The measure foresees the preparation of a project which includes the actual needs of the transport system. It is foreseen that the existing transport infrastructure is applied and reconstructed or upgraded to the greatest extent possible. This mainly refers to interventions in the infrastructure. Only in certain cases or at locations where a suitable standard cannot be provided on the existing infrastructure are the possibilities of preparing the project outside them studied. Measure R.33 must be taken into account when siting and designing.
Ro.8	Skofja Loka city network	The situation on the current 2030 road network during afternoon rush hours on an average working day was analysed. Traffic congestion and jams occur on certain sections of the network, and thus related excessive emissions in the residential environment. The prevention, reduction or mitigation of environmental impacts, particularly in residential environments due to activities related to traffic are among the main strategic objectives. The measure anticipates the construction of a bypass to create suitable throughput capacity for long-distance and origin-destination traffic in the city. The measure also improves conditions in the residential environment. Measure R.33 must be taken into account when siting and designing.
Ro.9	Connection of Koroška to the motorway system	Certain areas of Koroška must be provided suitable accessibility, safety and adequate level of transport connections to the centres of regional importance and to core centres and core or comprehensive transport network (to the motorways). Thus, better possibilities for future development and the adequate economic and social connection of regions will be provided. The existing transport infrastructure has been modernised or upgraded to the greatest extent possible. This mainly refers to interventions in the infrastructure. Only in certain cases or at locations where a suitable standard cannot be provided are the possibilities of implementing interventions outside the existing infrastructure studied. Measure R.33 must be taken into account when siting and designing.
Ro.10	Connecting Hrastnik with Zidani Most and Brežice	Individual areas of Slovenia have poorer connections to regional centres, or their accessibility is difficult due to low travel speeds. In this section, the main road has only one lane, thus enabling alternating traffic in one direction. A proper standard of accessibility (two-lane main road) has to be provided to centres of regional importance as well as to core centres and the core or comprehensive transport network. At the same time, a proper connection past Krško to Brežice has to be established. Measure R.33 must be taken into account when siting and designing.
Ro.11	Connecting Kočevje with Ljubljana	Individual areas of Slovenia have poorer connections to regional centres, or their accessibility is difficult due to low travel speeds. A proper standard of accessibility (two-lane main road) has to be provided to centres of regional importance as well as to core centres and the core or comprehensive transport network. The measure foresees the preparation of a project which includes the actual needs of the transport system. It is foreseen that the existing transport infrastructure will be used and reconstructed or upgraded to the greatest extent possible. This mainly refers to interventions in the infrastructure. Only in certain cases or at locations where a suitable standard cannot be provided on the existing infrastructure are the possibilities of preparing the project outside them studied. In addition to road infrastructure, there is also rail infrastructure in the direction of Kočevje. When preparing the measure, both modes of transport have to be taken into account. What specific measures can meet the objectives of faster and better accessibility also has to be established. In particular, whether upgrading the rail infrastructure would fully meet the foregoing objectives has to be studied, or if the final proposals for measures should be sought in the road and rail infrastructure by taking into account the more efficient implementation of public transport. Measure R.33 must be taken into account when siting and designing.



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Harmonisation with the Transport Development strategy/ Code	Measure	Description of measure
Ro.12	Ljubljana motorway ring and motorway connecting roads and their rearrangement	<p>The situation on the current 2030 road network during afternoon rush hours on an average working day was analysed. Congestion occurs on almost all sections of the Ljubljana motorway ring. Planned measures:</p> <ul style="list-style-type: none"> • introduction of public transport in which railway assumes a more significant role in the main directions or in the direction of regions. It can be expected that some traffic will decrease; nevertheless, an increase in traffic can be expected up to e.g. 2030 due to an increase in mobility; • introduction of the ITS system; • if these measures do not fully eliminate problems, measures should also be implemented to increase the capacity of existing motorway sections and connecting motorway roads, e.g. by expanding the existing motorway with another driving lane in each direction; • rearrangement and new construction of connecting motorway roads, e.g. Brezovica, Smarje - Sap, Domžale, Vrhnika; • the possibility of implementing the project by means of private-public partnership should also be studied. <p>Measure R.33 must be taken into account when siting and designing.</p>
Ro.13	Connection of Gorenjska, Ljubljana and Stajerska	<p>The connection between Gorenjska and Stajerska is provided by the Ljubljana motorway ring. Thus, a great part of transport between the regions runs on a longer route, incurring additional costs to users. Traffic burdens the Ljubljana motorway ring and the environment with emissions. The solution is in tangential connections: the new construction of a direct connection between Gorenjska and Stajerska (Želodnik-Vodice) which will shorten the route between both regions; a new road between Trzin and the planned Studa connecting motorway road, which will relieve the existing Trzin radial road and Trzin and Domžale road network; the construction of the Stanežiče–Brod–Ježica–Sentjakob connection which will relieve the Ljubljana city road network. Measure R.33 must be taken into account when siting and designing.</p>
Ro.14	Connection between Stajerska and Dolenjska	<p>The connection between Stajerska and Dolenjska runs past Ljubljana via the motorway. As a result, a large volume of the traffic between Stajerska and Dolenjska runs on a longer route, which incurs costs to users. Traffic also burdens the Ljubljana motorway ring and the environment with emissions. The existing roads between Celje and Novo Mesto do not provide a proper connection standard. A direct connection between Celje and Novo Mesto will shorten the route between the regions. The possibility of using the existing infrastructure, which must be upgraded for speeds up to 90 km/h, must be studied. Where this is not possible, a new road should be constructed. Measure R.33 must be taken into account when siting and designing.</p>
Ro.15	Connection of Skofja Loka/Medvode to Ljubljana	<p>Skofja Loka and Medvode are considerable traffic generators, especially in terms of daily commuters. Daily burdening of traffic from these directions is particularly pronounced during morning and afternoon rush hours. Traffic jams occur on the road between Ljubljana and Medvode, which increases expenses for users and additionally burden the environment. Planned measures:</p> <ul style="list-style-type: none"> • some daily transport flows have to be redirected to other transport modes, in particular to public passenger transport, whereby it is necessary to study which organisational solutions (bus transport, railway transport) can meet current and expected needs; • upgrade or completion of the existing road infrastructure; • where a suitable standard cannot be provided on the existing infrastructure, the possibilities of preparing the project outside it are studied. <p>Measure R.33 must be taken into account when siting and designing.</p>
Ro.16	Road network around Maribor	<p>The situation on the current 2030 road network during afternoon rush hours on the average working day was analysed. The main problem is the traffic in the southern part of Maribor, namely in the direction from the western part of Maribor and its hinterland towards the expressway and motorway. Traffic jams occur on certain sections of the network due to traffic congestion, and thus related excessive emissions in the residential environment. The prevention, reduction or mitigation of environmental impacts, particularly in residential environments due to activities related to traffic are among the main strategic objectives. The measure anticipates the construction of a bypass to create suitable throughput capacity for long-distance and origin-destination traffic in the city. The measure also improves conditions in the residential environment. Measure R.33 must be taken into account when siting and designing.</p>



Harmonisation with the Transport Development strategy/ Code	Measure	Description of measure
Ro.17	Road network around Koper, connection of the Koper-Izola-Piran conurbation to the motorway system	<p>The situation on the current 2030 road network was analysed, i.e. during the afternoon rush hour on an average working day and in a tourist peak period. Traffic congestion and jams occur on certain sections of the network (in the Koper direction, Dragonja border crossing), and thus related excessive emissions in the residential environment. The prevention, reduction or mitigation of environmental impacts, particularly in residential environments due to activities related to traffic are among the main strategic objectives. The measure anticipates the construction of a bypass to create suitable throughput capacity for long-distance and origin-destination traffic in the city. The measure also improves conditions in the residential environment.</p> <p>The situation on an average day on the existing road from Izola in the direction of Piran or Portorož is extremely poor in terms of transport technical and safety characteristics, while the daily volume of traffic exceeds the capacity of this road. Additional traffic in summer months and rush hours also affect the situation, causing major traffic jams. The measure foresees the construction of a new expressway from Jagodje to Lucija, which is the missing section of the so-called coastal road, the function of which is to connect the conurbation of Koper-Izola-Piran to the motorway system. Measure R.33 must be taken into account when siting and designing.</p>
Ro.18	Connection of Ilirska Bistrica (HR) to the motorway system	<p>The section from Postojna/Divača to Croatia is part of the TEN-T comprehensive network, and a missing section between Ljubljana/Trieste and Rijeka, as well as a missing part of the Adriatic-Ionian road connection. Ilirska Bistrica and its hinterland currently have a main road with no proper standard for a long-distance main road. Also, denser tourist traffic is recorded in the direction from Postojna towards Croatia (Rijeka, western part of Istria, Kvarner), which is especially heavy during the tourist season, when it reaches 3- to 4-times the average. During this period, traffic congestion occurs, which also present an additional environmental burden. The section from Postojna to Croatia is also a part of the TEN-T comprehensive network. Traffic analyses indicate that the road already in current conditions does not meet the proper standard, since it runs through the settlements, part of the road has no proper elements and also goods vehicle traffic is limited. The measure anticipates the modernisation of the existing infrastructure in order to ensure an appropriate standard and throughput of the existing road for speeds up to 90 km/h. The measure also foresees the study of relocating a section of the route that passes the areas of settlements in the form of by-passes, in particular to separate long-distance traffic from national transport and origin-destination traffic. Also, better traffic safety has to be ensured, so the solution also needs to include the separation of motorised from non-motorised traffic. Where a suitable standard cannot be provided on the existing infrastructure, the possibilities of preparing the project outside it are studied. Measure R.33 must be taken into account when siting and designing.</p>
Ro.19	Celje road network	<p>The situation on the current 2030 road network during afternoon rush hours on an average working day and in a tourist peak period was analysed. Traffic congestion and jams occur on some sections of the Celje network between connecting motorway roads and other network, and thus related excessive emissions in the residential environment. The prevention, reduction or mitigation of environmental impacts, particularly in residential environments due to activities related to traffic are among the main strategic objectives. The measure anticipates the construction of a bypass to create suitable throughput capacity for long-distance and origin-destination traffic in the city. The measure also improves conditions in the residential environment. Measure R.33 must be taken into account when siting and designing.</p>
Ro.20	Connection of Ormož to Ptuj/Maribor	<p>Individual areas of Slovenia have poorer connections to regional centres or their accessibility is difficult due to low travel speeds. Proper accessibility has to be provided to centres of regional importance, as well as to core or comprehensive transport network (motorways) The measure foresees the preparation of a project which includes the actual needs of the transport system. An adequate by-pass system is arranged in Ptuj, while the level of traffic situation has improved at the Ptuj-Ormož connection, namely by interventions in the existing transport infrastructure. Where a suitable standard cannot be provided on the existing infrastructure, the possibilities of preparing the project outside the existing transport infrastructure (partially or entirely) are studied. Measure R.33 must be taken into account when siting and designing.</p>
Ro.21	Nova Gorica city Network	<p>The situation on the current 2030 road network during afternoon rush hours on an average working day and in a tourist peak period was analysed. Traffic congestion and jams occur on some sections of the Nova Gorica network, and thus related excessive emissions in the residential environment. The prevention, reduction or mitigation of environmental impacts, particularly in residential environments due to activities related to traffic are among the main strategic objectives. The measure anticipates the construction of a bypass to create suitable throughput capacity for long-distance and origin-destination traffic in the city. The measure also improves conditions in the residential environment. Measure R.33 must be taken into account when siting and designing.</p>



Harmonisation with the Transport Development strategy/ Code	Measure	Description of measure
Ro.22	Connection of Kozjansko, Rogaška Slatina and the hinterland to the central network	Bizeljsko, Kozjansko, Sentjur and Rogaška Slatina have poorer connections to regional centres or their accessibility is difficult due to low travel speeds. A proper standard of accessibility has to be provided to centres of regional importance, as well as to core centres and the core or comprehensive TEN-T transport network. The measure anticipates the preparation of several projects which take account of the actual needs of the transport system. Interventions are particularly planned for the existing transport infrastructure. Only in certain cases or locations where a suitable standard cannot be provided on the existing infrastructure, is the possibility of preparing a project outside the existing transport infrastructure studied (e.g. Dramlje–Sentjur connection). R.33 measure must be taken into account when siting and designing.
Road network		
Ro.31	Improvement of the accessibility of regions without a direct connection to the TEN-T network	A regional network (road and railway network) which would enable people and economy to access regional centres (jobs, services of public importance) must be improved within a reasonable time. In addition to regional connections, the construction of bypasses is foreseen due to throughput issues caused by excessive environmental burdens and road traffic safety.
Ro.32	Traffic management, monitoring and counting, and information system	Traffic management is an important element of a traffic system. Traffic data collection and processing is a basis for complementing the traffic database. Traffic counting is done in various ways, whereby access to data at the proper platforms, which are also publicly accessible, needs to be ensured. The functions of traffic control, management and operation form a basis for improving traffic flow capacities. Efficient systems enable management which minimises congestions during regular traffic flow and during exceptional traffic events. The national transport model was developed within the scope of the broader preparation of the transport system development documents in the Republic of Slovenia. The model has to be maintained and upgraded with new research studies (e.g. surveys of households, other research projects), so that it is constantly up to date is thus ensured.
Ro.33	Measures to prevent, mitigate and maximise the elimination of the consequences of significant impacts of the plan on the environment, nature, people's health and cultural heritage (mitigation measures)	<p>Measures to protect the environment from noise caused by road transport in particular include measures to reduce noise at source (low-noise road surface, temporary or permanent rerouting of transit transport and reducing speeds in noise-exposed areas) and measures on buildings (anti-noise renovation of façade elements). More detailed measures must be defined in the operational programme for protection from noise, which must include all important roads and the road network on both sides of the settlement areas (Municipality of Ljubljana and Municipality of Maribor). In preparing the respective programme, the focus must be on: a) reduction of noise caused by road infrastructure; detailed strategy and technological solutions to ensure efficient noise reduction due to tyre-road sound emissions must be prepared; b) preparation and observation of uniform positions to determine areas protected by noise barriers/embankments and the method of constructing them; and c) formation of uniform positions to prepare and implement measures on buildings.</p> <p>In terms of reducing the degradation of the natural environment, the reconstruction of existing infrastructure connections has priority over the construction of new traffic routes, and also the positioning of transport infrastructure in the existing infrastructural corridor has priority over positioning in naturally preserved areas.</p> <p>Therefore, sustainable land management and soil protection must be ensured when planning the integration of transport infrastructure in the environment. Activities in agricultural land and woodland must be reduced to the lowest level possible, and planned according to land with poorer production potential, and land outside dense forest areas and forest areas with important wood production functions at the first level must be given top priority.</p> <p>Transport infrastructure should not be integrated in the coastal land. Such interventions may cause significant impacts on the ecological status of watercourses and a reduction of retention surfaces, while cumulative impacts affect the biodiversity and ecosystem of the area. When planning interventions in areas with extremely high, very high and highly vulnerable aquifers, it is necessary to study and plan appropriate technical solutions that will prevent negative effects of the construction and operation, as well extraordinary events. In the spatial integration of transport infrastructure, it is necessary to avoid water protection areas and areas at risk of flood and related erosion.</p> <p>Infrastructure corridors should not be integrated in cultural heritage areas, exceptional landscapes or landscapes with distinctive features at the national level. The proper technical measures must be applied to provide a high-quality landscape image by taking into account the natural and cultural features and topography of the area. When siting transport infrastructure in the area, it is necessary to avoid areas with nature conservation status (Natura 2000 areas,</p>



Harmonisation with the Transport Development strategy/ Code	Measure	Description of measure
		<p>protected areas, ecologically important areas, areas proposed for protection). The time when interventions occur has to be adjusted to the life cycles of animals and plants. Variants with less impact on the migration paths of wild animals should be given priority (those with long sections in tunnels, covered burrows; those which cross fewer migration paths). When fragmenting migration paths, adequate passages must be provided, pursuant to good practices in the European Union.</p> <p>On the basis of analyses of data on traffic accidents and on-site inspections, crossroads and sections with high rates of traffic accidents are determined. Measures to improve traffic safety must be implemented in these areas due to other impacts. For these, a programme of measures is prepared which determines the immediate possible measures; short-term, medium-term and permanent measures to improve traffic safety. Previous analyses indicated that many of the crossroads and sections in the Slovenian transport network must be rehabilitated. Measures to improve motorway safety also need to include safety measures which efficiently prevent wrong way driving and which have to be carried out in the shortest time possible.</p> <p>Chapter 9 of this document also states specific mitigation measures according to individual areas which must be taken into account in the preparation of spatial plans and design of road infrastructure.</p>
Ro-34	Development of network into intermodal hubs, agglomerations in accordance with demand	<p>The new TEN-T Regulation lists the following transport hubs in Slovenia: Ljubljana and Koper as hubs in the core section of the TEN-T network and Maribor as the hub in the comprehensive section of the TEN-T network. These points have the best possibilities for the development of logistics activities relating to cargo, and Ljubljana and Maribor have the potential for establishing multimodal passenger platforms. However, a wider (greater scope) approach to goods transport and the transition of passengers from one transport mode to the other could also be provided in Slovenia. This will provide efficient combinations of various transport modes in the transport chain and thus increase transport efficiency. For this purpose, it is necessary to identify possible points of passenger and goods transition between various transport modes in the future. Where necessary and efficient, intermodal passenger platforms should be established to increase the use of public passenger transport, or a proper connection of logistics freight terminals with various modes of transport should be provided where a commercial interest exists.</p>
Ro-35	Stimulation of the use of eco-friendly vehicles and construction of a charging stations network	<p>Within the scope of EU institutions (the Council of Europe and the European Parliament), Directive No 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the employment of alternative fuels infrastructure was adopted. It stipulates that Member States must adopt national strategies for the respective field, namely relating to passenger vehicles for electric passenger vehicles, vehicles fuelled by compressed natural gas and hydrogen; relating to cargo vehicles for cargo vehicles fuelled by liquefied natural gas; relating to sea traffic for ships fuelled by liquefied natural gas and charging of ships with electric power from the land, and relating to aviation for charging aircraft with electric power at airports. The Directive also sets deadlines for this (mainly by 2025, except for electric vehicle charging stations, for which the deadline is 2020). In an annex, the Directive also lays down the standards for this infrastructure.</p> <p>Relating to environmental requirements at the national or EU level, the purchase of electric or hybrid vehicles will have to be promoted, and the network of charging stations has to be constructed, so that at least 15% of transport on Slovenian roads by 2030 is without GHG emissions. Financial incentives have to be projected which would encourage people to purchase the vehicles that run on environmentally-friendly fuels (e.g. electric power, gas).</p>
Ro-36	Internalisation of external costs	<p>This is a tool of transport policy based on European Directive 2011/76/EU of the European Parliament and of the Council of 27 September 2011 amending Directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructure. The Directive lays down that EU Member States must introduce the charging of external costs at least for heavy goods vehicles over 11t (it could also introduce charges for other vehicles) if this measure is adopted. Congestion, air and noise pollution may be charged for additionally. This is the inclusion of environmental costs related to energy efficiency (quantity of CO₂/km) and clean vehicles (EURO standard) in the fee price for the use of public roads and parking areas if they are located in city centres. The condition for this is the introduction of an electronic toll system in free traffic flow, or congestion charging.</p>
Ro-37	Restrictive parking policy	<p>Efficient measures to achieve objectives on the reduction of CO₂ emissions and pollutants are:</p> <p>a) reducing the number of kilometres travelled by passenger vehicles in urban environments; b) increasing the share of pedestrian and bicycle traffic in the modal split; c) increasing the share of public passenger transport in the modal split; d) increasing the number of passengers in cars used in urban environments and reducing the use of fuel per cargo unit; e) improving the energy efficiency of vehicles; among measures to reduce the number of kilometres travelled by passenger vehicle, efficient restrictive parking policy measures in large cities include payable parking and limiting surfaces intended for parking passenger vehicles.</p>



Harmonisation with the Transport Development strategy/ Code	Measure	Description of measure
Functioning/organisation of road traffic		
Ro.41	Modernisation of legislation and planning guidelines	The legislation and planning guidelines on roads have to stimulate the development of the sector and should follow the best international practice and European regulations, in particular those related to safety, interoperability, sustainability and environment.
Ro.42	Improving the financial sustainability of the road network and toll collection system	Introduction of a stable earmarked source of financing and establishment of an electronic toll system in free traffic flow.
Ro.43	Provision of an adequate standard of the existing road infrastructure (including road reconstruction at the secondary and tertiary levels)	The Republic of Slovenia has widespread road, railway and other infrastructure, which enable mobility and economic activities. For this reason, operators must provide for their suitable quality. In recent years, operators have introduced various measurements which are used to establish the real state of infrastructure quality. Some segments, e.g. motorways, have implemented a computer-based system (e.g. dTIMS_CT or PMS_DARS) which enables continuous monitoring of the state of roads and the preparation of reconstruction plans on the basis of mathematical models based on road surface deterioration curves. Such systems provide efficient infrastructure management and long-financial sustainability. Systems based on real data on the state of infrastructure which enable the planning of necessary measures also have to be introduced in other segments of infrastructure (other roads, railway etc.).
Ro.44	Recycling and use of waste in construction	Stimulation of recycling and application of own waste in construction and reconstruction of transport infrastructure and also the application of certified construction materials from recycled by-products or waste material from other sectors (Decree on Green Public Procurement is used). When using building materials for transport infrastructure which are not of primary natural origin, their volume (in particular they are used as construction fillings) should be taken into account, and also that some hazardous substances from waste materials can be permanently mobilised. New construction materials have even better functional qualities than materials of natural origin.
Ro.45	Reduction of pollutant emissions	Reducing pollutant emissions by adopting the measure that the road vehicle fleet in public transport is regularly modernised and when purchasing new vehicles, providing that these are in compliance with the state of technology; the same attention as to the stimulation of the use of public transport in urban centres is paid also to other modes of sustainable mobility (cycling, pedestrian zones or low emission zones). When preparing spatial acts for new infrastructure activities or for the extension of the existing transport network, the following general guidelines must be observed in order to attain the objective of reducing ambient air pollution: – measures to reduce pollutant emissions (prevention of traffic congestion, provision of smooth traffic flow at moderate travel speeds between 60 and 90km/h, traffic rerouting) have to be provided to the greatest extent possible; – measures to prevent increased traffic flow on individual sections of the road network, and measures to prohibit the entry of motor vehicles (especially cargo vehicles) which do not meet environmental standards for new vehicles must be implemented in areas with excessive ambient air pollution; – the integration of measures in populated areas which are especially sensitive to ambient air pollution (residential buildings; health-care facilities, tourist areas) should be avoided.
Ro.46	Preparedness for extreme weather conditions	Pursuant to Article 41 of Regulation (EU) No. 1315/2013 with regard to adaptation to climate change: ensuring the preparation of the analysis of the sensitivity of transport infrastructure to climate change, and on the basis of the findings of the analysis, implementing measures and adaptations that adequately improve the resistance of infrastructure to these changes. Guidelines, methodologies and procedures for collecting information on extreme weather conditions and for planning and implementing measures to reduce the sensitivity of transport infrastructure to these phenomena have to be developed.



Harmonisation with the Transport Development strategy/ Code	Measure	Description of measure
Ro.47	Provision of migration corridors for wild animals and protection of drivers against collisions with wild animals	The provision of migration corridors for wild animals and protection of drivers against collisions with wild animals: Reduction of the fragmentation of habitats of species by establishing passages for wild animals on existing traffic routes (especially for species from groups of mammals and amphibians). For this purpose, initially, a study is conducted or the findings of already conducted monitoring of roadkill are summarised. Then, based on the study findings, facilities for the migration of wild animals are established. Within the measure, a priority list of black spots where amphibians are run over is prepared, where facilities for migrations are arranged, including redirecting fences. To improve traffic safety (to prevent collisions with large mammals), the setting-up of chemical deterrent devices, sound devices, light reflectors and combined devices is possible on unfenced traffic routes, depending on location and traffic volumes. In newly-planned traffic routes, the preservation of existing migration paths with the construction of proper facilities and other arrangements preventing wild animals' movements (especially for species of wild animals, roe deer, red deer, bats and amphibious animals) has to be provided for. For the needs of planning, a purpose study is prepared already in the first phase (or the results of already conducted studies, if available, are summarised) which includes data on species the migration of which will be affected by the intervention, and guidelines for the project designer on planning the facility or arrangement (location, shape, size, greening of the facility and surroundings, etc.).
Ro.48	More accessible infrastructure for less mobile persons	The proper accessibility of infrastructure must be provided for all users. It must be adapted to be more accessible for less mobile persons, e.g. arrangement of proper access from pavements, application of disabled-friendly means of public transport; setting up public electric charging stations, adjusted to wheelchair use, etc.

2.7.3 Summary of Road Transport Projects

Considering the analysis of the current transport system (the analysis carried out in the first paragraph), the main existing strategic documents for the area in terms of infrastructure and mobility development and the results of the analysis of existing National and international Strategic Plans presented in the previous paragraph of the volume, are now defined the most relevant road projects classified with respect to the state of progress and the main objective. Following list of selected interventions also constitutes a geographical database.

The table below includes the road infrastructural projects identified in the country and characterized by type of project (upgrade or new construction), main goal of the intervention and the belonging scenario (baseline 2030/2040, or project). The Baseline scenario has been defined by selecting the main ongoing and planned projects in the Region with a national/regional relevance, and very mature projects whose implementation is already planned and financed. Project scenario describes interventions which are included in a plan/program/strategy but still not financed or not entirely financed.

Table 85 Road projects in Slovenia

ID	Scenario	Object	Name	Main goal
SI1	Project	New construction	Construction of new interconnecting junction between the existing Ljubljana motorway and the regional road network: link road Brezovica/Dragomer	Faster connection in the section between Maribor and Zagreb

ID	Scenario	Object	Name	Main goal
SI2	Baseline 2030	New construction	Construction of Karawanken 2nd tube	Construction of Karawanken 2nd tube. It will connect the A2 motorway in Slovenia with the A11 motorway in Austria on the Mediterranean and Baltic Adriatic Core Network Corridors
SI3	Project	Upgrade	Upgrade road Draženci – Gruškovje	Faster connection in the section between Maribor and Zagreb
SI4	Project	New construction	Construction of road Postojna - Jelšane	Faster connection from port of Rijeka to the north
SI5	Project	New construction	TIR Truck Park Sermin	Construction of a Safe and Secure Truck Parking Area on the Slovenian A1 motorway in Koper area, which is located on the Mediterranean and Baltic Adriatic Core Network Corridors

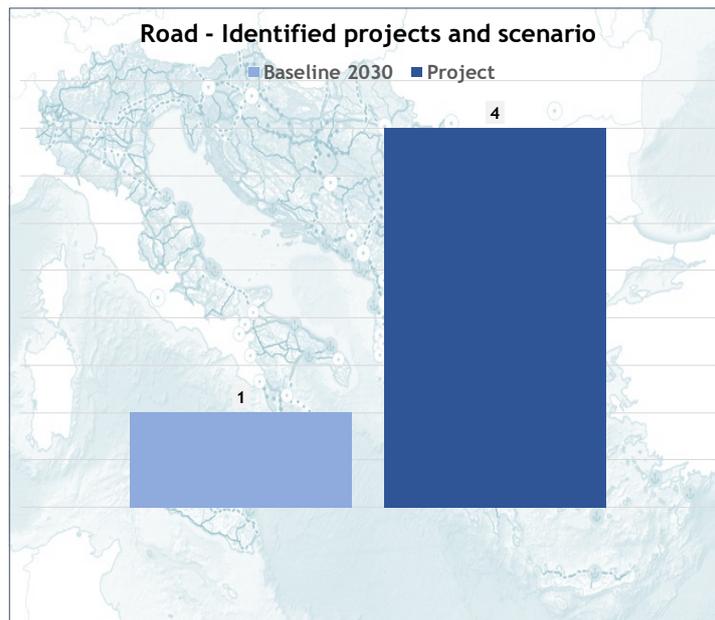


Figure 56 Road projects by scenario, in Slovenia

5 road interventions selected in Slovenia are now represented in a map in which is possible to recognize functionally classified current road network (primary, secondary, tertiary) and road project classified by scenario.

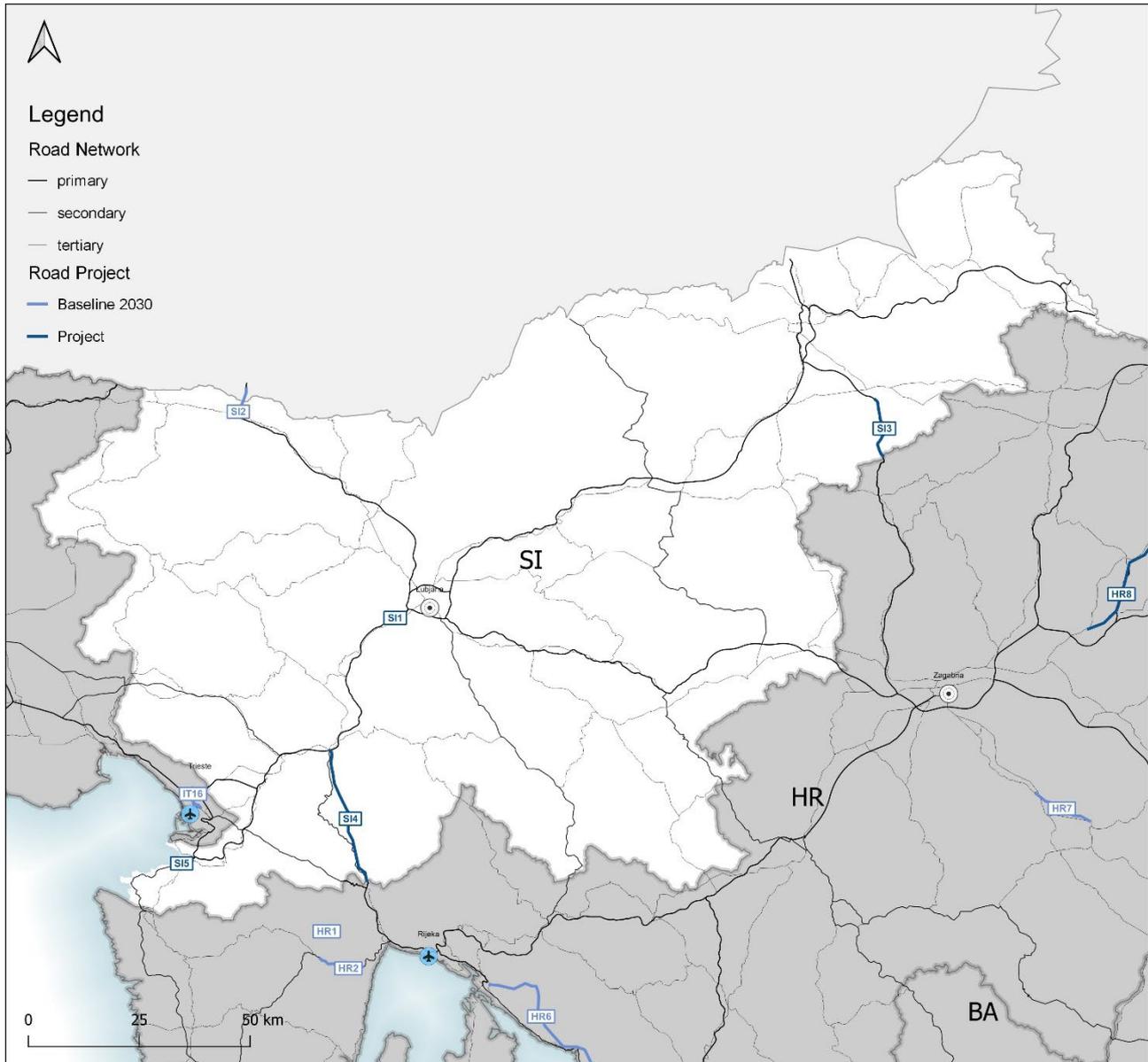


Figure 57 – Map of road project by scenario in Slovenia.

2.8 Greece

2.8.1 National Transport Strategy and Action Plan

The “National Transport Plan for Greece – NTPG”²⁸ is a consultancy project with the primary objective to provide the basis for sustainable transport infrastructure and service development in Greece over the medium to long term. The National Transport Plan for Greece is a key policy document which will define the transport sector development strategy on a long-term time horizon of 20 years (2017-2037) and will support

²⁸ <http://nationaltransportplan.gr/>

Greece's economic development. It will also determine the main actions that may receive financial support from International Financing Institutions and donors.

The High-Level Objectives (HLO) defined for the transport sector in Greece are:

- Delivering Economic Growth and Efficiency in the development and operation of the transport system, at Regional and National level, measured through travel times, reliability, and cost effectiveness,
- Improving Transport Connectivity, comprising connectivity with the islands, connectivity between complementary transport modes, interoperability of systems, territorial cohesion and cross-border connectivity with EU/non-EU countries,
- Ensuring an Environmentally Sustainable transport sector,
- Providing Accessibility and Social Inclusion with respect to jobs, education and social services for the population,
- Maintaining a Safe and Secure transport system.

2.8.2 Proposed objectives and measures

Investment Pillars

In parallel with the fulfilment of the five High Level Objectives of this Plan eight Investment Pillars were defined aiming to guide the identification of measures. The pillars represent the country's vision to transport development and they define those specific areas where most attention should be focused on in order to deliver an economically efficient, safe, environmentally sustainable, accessible and connected transport sector. An additional ninth pillar was necessary to include measures linked also with the subsequent 20-year strategy forming thus the interface between the current plan and its updates and ensuring the continuity of actions. Therefore, these nine strategic pillars are the identified priority areas for transport investment and development for Greece, aiming at further improving and integrating the national transport system.

They are defined as follows:

1. Enhancing Safety, Sustainability, Efficiency and Competitiveness of Transport
2. Making PATHE an Efficient Multimodal Corridor
3. Building Stronger International Land Connectivity
4. Supporting the Tourism Sector
5. Enhancing Connectivity to the Greek Islands
6. Improving the Efficiency of Logistics Sector
7. Developing an efficient Urban and Suburban Public Transport System to support National Transport System
8. Fostering Regional Mobility and Growth
9. Exploring Further Opportunities

Measures

Over 500 km of new roads (highways and bypasses) and significant upgrades and rehabilitations are currently under implementation across Greece, being overseen by the Ministry of Infrastructure and Transport. Investments include elements of the strategic road network, as well as a few sectional upgrades of regional and local roads. Projects are funded under the Partnership Agreement 2014-2020 between Greece and EU

and/or by exclusively national funds, and completion of these investments is anticipated before the year 2027.

- Construction of southern (Xyniada-Lamia) and northern (Grevena-Trikala) sections of A3 (Kentriki Odos) motorway, part of E65, linking A1 and A2 motorways, totalling 94 km;
- Vertical Axes of Egnatia Odos to Greek Borders with neighbouring countries;
- A 75 km new motorway between Patra and Pyrgos including also upgrade of road accesses;
- North Crete Road Axis (A90 motorway): a 200 km four-lane motorway from Chania to Agios Nikolaos through Rethymno and Heraklion, and improvements in vertical axes;
- The 48.5 km ‘Amvrakia Odos’ motorway linking A5 (Ionia Odos) motorway to Aktio airport, Preveza and Lefkada;
- Road bypasses of main cities (including Thessaloniki Western Internal Ring Road, Katerini Ring road, bypasses of Chalkida, Larissa, Karditsa);
- Other section upgrades/ local improvements, such as: road axis Thessaloniki-Kilkis-Doirani; road section Potidaia-Kassandra in Chalkidiki; improvement works on Lamia-Karpenissi National Road; upgrade section of Agrinio-Karpenissi National Road; construction of new link from Patra Bypass Road to Patra-Tripoli National Road; new link from Aigio Port to A8 motorway; construction of road Lasteika-Ag. Ioannis bypass-Katakolo; new link from A5 Terovo I/C to Provincial Road Ioannina-Plaka Bridge; construction of Trikala-Arta Road (section Pyli Bypass Road-Paleomonastiro) and of road Delta-Palamas; construction of Provincial Road Rizomylos-Koroni (section Tzane Bridge-Kalamaki); improvement of Provincial Road Gytheio-Areopoli-Gerolimenas in sections; completion of road works on Heraklio-Viannos axis.

2.8.3 Summary of Road Transport Projects

Considering the analysis of the current transport system (the analysis carried out in the first paragraph), the main existing strategic documents for the area in terms of infrastructure and mobility development and the results of the analysis of existing National and international Strategic Plans presented in the previous paragraph of the volume, are now defined the most relevant road projects classified with respect to the state of progress and the main objective. Following list of selected interventions also constitutes a geographical database.

The table below includes the road infrastructural projects identified in the country and characterized by type of project (upgrade or new construction), main goal of the intervention and the belonging scenario (baseline 2030/2040, or project). The Baseline scenario has been defined by selecting the main ongoing and planned projects in the Region with a national/regional relevance, and very mature projects whose implementation is already planned and financed. Project scenario describes interventions which are included in a plan/program/strategy but still not financed or not entirely financed.

Table 86 Road projects in Greece

ID	Scenario	Object	Name	Main goal
EL1	Baseline 2030	New construction	Construction of A3 Motorway: section Xyniada - Lamia	Faster connection and more capacity in the north-south axis
EL2	Baseline 2030	New construction	Construction of A3 Motorway: section Grevena-Trikala	Faster connection and more capacity in the north-south axis

ID	Scenario	Object	Name	Main goal
EL3	Baseline 2030	New construction	Construction of road Egnatia Odos Vertical Axis: section of Alexandroupolis-Ormenio (missing section between intersection Egnatia Odos-Greek National Road 51 till the border with Bulgaria)	Connection with the Bulgarian borders (at Ormenion)
EL4	Baseline 2030	New construction	Construction of road Egnatia Odos Vertical Axis: section of Xanthi – Ehinos – GR/BG Border	Completion of the missing link on the Ten -T axis
EL5	Baseline 2030	New construction	Construction of road Egnatia Odos Vertical Axes: section of Moudania-Potidaia	Completion of the missing link on the Ten -T axis
EL6	Baseline 2030	New construction	Construction of Aktio-Amvrakia linking E55 and A5 motorway	The Aktio-Amvrakia highway is considered valuable not only for the region of Etoloakarnania which acquires a network of highways along the Ionian Road but also for the Ionian islands. Lefkada will be the first winner as the driving time will be reduced by almost one hour and from Athens it will take about 3 hours to reach the city of Lefkada.
EL7	Baseline 2030	New construction	Construction of A5 Motorway: southern section Patra-Pyrgos	Faster connection and more capacity in the north-south axis south of Patras
EL8	Baseline 2030	New construction	Construction of road North Crete Road Axis (A90 Motorway)	Faster connection within the island
EL9	Baseline 2030	New construction	Construction of Egnatia odos Vertical axis Serres -Drama -Kavala-section Drama -Kavala. (Ten -T comprehensive network)	Completion of the missing links on the Ten -T axis, connection of the port and airport of Kavala with the BBCP Promahonas (GR-BG Border).
EL10	Baseline 2030	Upgrade	Construction of Egnatia Odos Vertical Axis Kozani-Ptolemaida - Florina -Niki (Cross border with N. Macedonia) -section Ptolemaida - Florina	Completion of the missing link on the Ten -T axis.
EL11	Project	New construction	Construction of Igoumenitsa bypass and the road section Igoumenitsa - Mauromati (Cross border with Albania at the BCCP Quafe Bote)	Connection with the Adriatic-Ionian Corridor, increasing accessibility to the port of Igoumenitsa

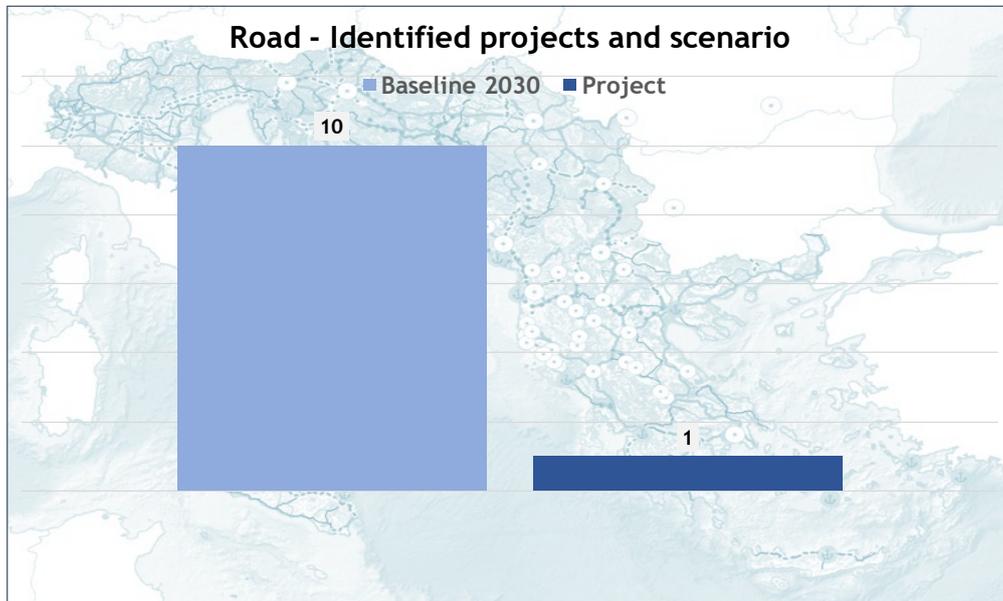


Figure 58 Road projects by scenario, in Greece

11 road interventions selected in Greece are now represented in a map in which is possible to recognize functionally classified current road network (primary, secondary, tertiary) and road project classified by scenario.

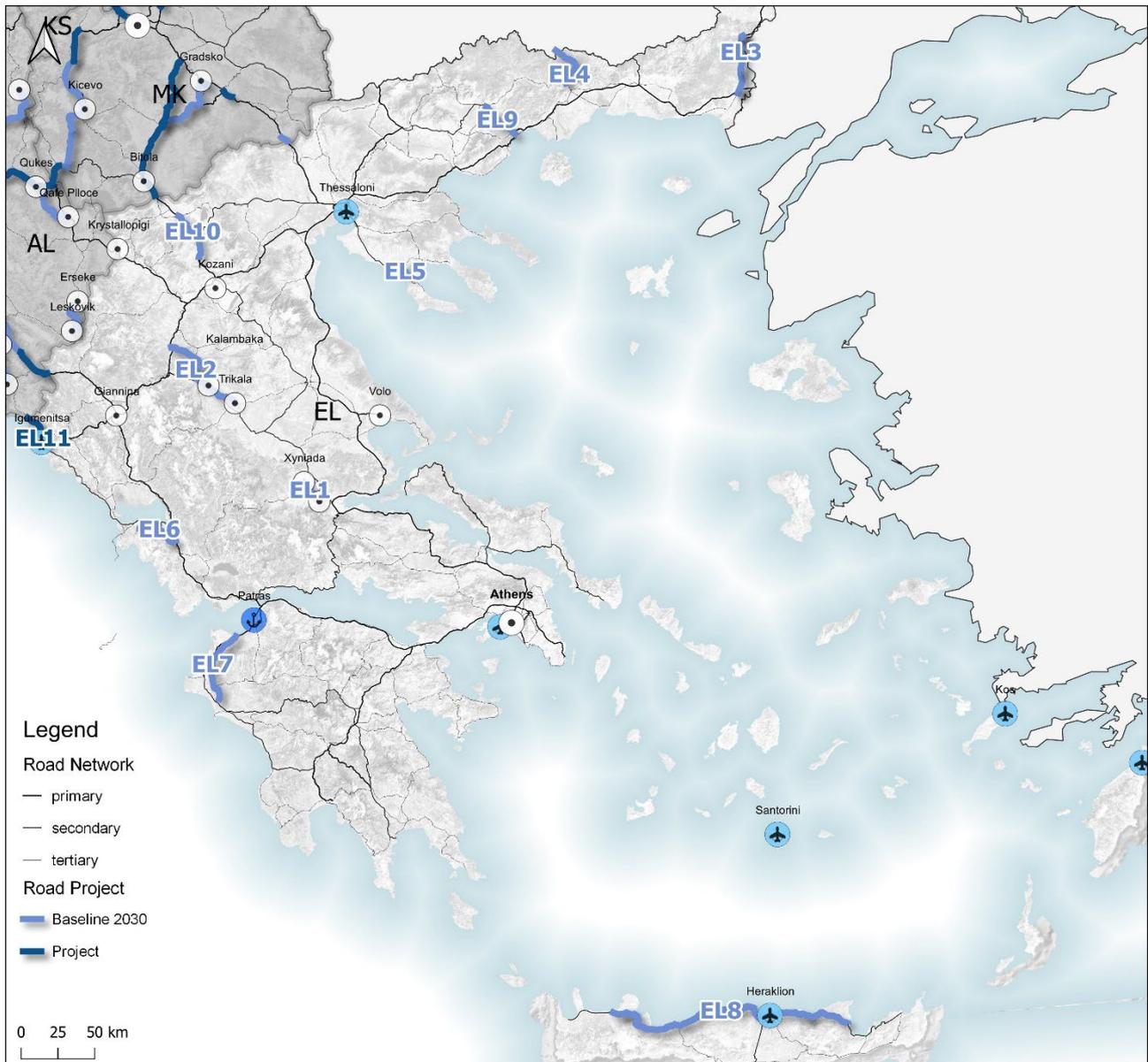


Figure 59 – Map of road project by scenario in Greece.

2.9 North Macedonia

2.9.1 National Transport Strategy and Action Plan

“Draft National Transport Strategy of the Republic of Macedonia”²⁹ dates to December 2018. The Government incorporates into the plan the EU Guidelines, Directives/regulations with the aim of integration of the Country within the European Union.

²⁹ <http://www.mtc.gov.mk/media/files/2019/NTS-final%20EN.pdf>

The National Transport Strategy (NTS) demonstrates this ambition through the development of a sustainable transport sector which is harmonized with other strategic developments of the country, that has an intermodal infrastructure fully integrated into the European TEN-T network.

Guided by the fundamental principle that transport is a service rather than an economic good, the NTS considers the general objectives for the economic and social development of the country, bearing in mind the needs of future generations and the preservation of the environment. The strategy therefore proposes medium and long-term policy measures and activities period to address the fundamental challenge of improving the quality of transport infrastructure and operations efficiently and effectively.

2.9.2 Proposed objectives and measures

The overall objective of the National Transport Strategy, based on a comprehensive analysis of the Transport sector in the Republic of Macedonia, is to develop a harmonized transport sector that is internationally compatible and integrated in the TEN-T system, that stimulates the economic and social development of the country, preserves the environment, and secures the needs of future generations.

The project identified four **general objectives**³⁰:

- GO1: Strengthen EU integration and promote regional cooperation.
- GO2: Contribute to the improvement of the economic sustainability at the national level.
- GO3: To introduce green mobility and logistic focused to environmental performance of the Transport sector.
- GO4: Establishment of reliable and safe transport system.

Each general objective is divided into three further specific objectives, reported below.

Specific Objectives

1.1. To complete the SEETO/TeTC Core and Comprehensive Network passing through the national territory and upgrade the existing road and rail infrastructure sections to the modern technical and operational standards.

1.2. To reduce border crossing times and procedures.

1.3. To finalise the alignment of the Macedonian transport legislation to the EU acquis.

2.1. To improve the accessibility and quality of the national transport infrastructure and transport services.

2.2. To ensure the socio-economic and financial feasibility of transport development projects & initiatives.

2.3. To improve the administrative and operational capacity of governance structures.

3.1. To develop and improve environmentally friendly and low carbon transport systems.

3.2. To stimulate modal shift.

³⁰ European Union Framework Contract Beneficiaries 2013-Lot 2, Draft National Transport Strategy, December 2018

3.3. To increase the importance of intermodal and multimodal transport in national transport policy.

4.1. To improve transportation safety.

4.2. To improve road traffic and road infrastructure safety.

4.3. To introduce IT technologies and Implementing Intelligent Transport Systems (ITS) in the transport sector.

Infrastructure measures

In accordance with the general and specific objectives, the related infrastructural interventions are proposed, divided into two clusters, hard and soft. they are clustered per transport mode and the measures relating to road transport are shown below.

“Hard” transport policy measures related to road transport mode:

Table 87 Infrastructure measures related to road transport. [Source: Draft National Transport Strategy, December 2018]

N	SO	Mode	Transport infrastructure investments	Priority	Realization period
MI 1	1.1	Road	Completing SEETO core and comprehensive road network passing through the national territory (incl. Feasibility studies and technical design)	Short to Long term	1 to 12 years
MI 3	1.2	Road	Increase number of the border crossings, identification of road infrastructure bottlenecks at the existing borders, propose and implement solutions to ensure a clear separation of traffic flows between private cars, heavy goods vehicles and, where possible, buses	Short to Mid term	2 to 6 years
MI 5	2.1	Road	Extension and improvement of national and regional road network in the country in accordance with EU standards (incl. Incorporating safety standards into road design and construction)	Mid term	6 years
MI 6	2.1	Road	Improving existing road supplement infrastructure, (signalization, safety related infrastructure, parking and road facilities) among other to facilitate access for people with special needs	Mid term	6 years
MI 16	3.3	Road/rail	Implementing railway/road projects for intermodal/multimodal transport with containers (priority action, construction of Container terminal Trubarevo –Skopje)	Short to long term	1 to 12 years
MI 17	4.1	All modes	Improving traffic safety on level and grade-separated crossings between different modes of transport	Short to Long term	1 to 12 years
MI 18	4.2	Road	Infrastructure improvements on priority number of dangerous sections in the urban areas	Short to Mid term	2 to 6 years

N	SO	Mode	Transport infrastructure investments	Priority	Realization period
MI 19	4.2	Road	Technical improvement of the most dangerous sections (infrastructure and signalisation) and number of black spots reduction on the national and SEETO road network	Short to Mid term	2 to 6 years
MI 22	4.3	Road/urban	Introducing ITS field devices such as: (i) traffic cameras and sensors, (ii) parking management systems; (iii) roadway payment system such as automated toll collection system; safety monitoring devices; signal controllers and traffic lights etc.	Short to Long term	1 to 12 years

“Soft” transport policy measures related to road transport mode:

Table 88 Infrastructure “soft” measures related to road transport. [Source: Draft National Transport Strategy, December 2018]

N	SO	Mode	Transport infrastructure related measure	Priority	Realization period
MI 23	1.2	Road/rail	Introducing monitoring of time spent on road/rail border crossings (freight/passengers)	Short to Mid term	2 to 6 years
MI 25	2.3	All modes	Involving of all relevant transport stakeholders (administration, business, universities, civil society etc.) in potential discussion on transport development	Short to Long term	1 to 12 years
MI 26	2.3	All modes	Implement infrastructure IT-based system for transport statistics and information collection	Short to Mid term	2 to 6 years
MI 27	3.2	All modes	Implement infrastructure IT-based system for transport statistics and information collection	Short term	2 years
MI 28	3.3	All modes	Support and stimulate the development of multimodal and intermodal transport	Short to Long term	1 to 12 years
MI 30	4.1	Road/urban	Support and stimulate the development of multimodal and intermodal transport	Mid term	6 years
MI 31	4.2	Road	Update of National safety strategy and develop an Action plan/launch Transport National Traffic Safety Programme	Mid term	6 years
MI 32	4.2	Road	Investigate the number of dangerous sections/black spots (study and database, action plan with possible measures for reduction of the number)	Mid term	6 years
MI 33	4.2	Road/urban	Increase public awareness for road and urban transport safety (media campaigns, educational activities)	Mid term	6 years
MI 34	4.3	All modes	Provide conditions for introduction of Intelligent Transport Systems and intermodal transport infrastructure and services	Mid to long term	6 to 12 years

2.9.3 Overview of transport project in North Macedonia based on “Five-year Rolling Work Plan for Development of the Indicative TEN-T Extension of the Comprehensive and Core Network in Western Balkans”³¹

This work plan is a Strategic document which represents an important basis for a “common, more focused approach to regional connectivity” for the implementation of the Transport Community Treaty.

The main purpose is to ensure coordinated development of the TEN-T in the region and achieve transition to a cohesive network, while all regional partners are pursuing their own connectivity goals.

The document provides an overview of the state of play in development of the indicative extension of the TEN-T network, in term of compliance with TEN-T Standards, to the Western Balkans. The status shown is based on data from the Annual Report on the Development of the TEN-T network of the Regional Steering Committee.

Another document’s section includes an overview of TEN-T development plans in the region by analysing regional plan, the top priorities for the region in terms of TEN-T network development, a list of concrete actions for Regional Partners to focus on over the next few years.

Finally, The Transport Community Permanent Secretariat has developed a Sustainable and Smart Mobility Strategy for the Western Balkans together with a corresponding GAP analysis. The purpose is also providing a roadmap for digitalisation and decarbonisation of the region’s transport sector.

The main objectives identified for the region are summarized below.

Key objectives:

- Enhancing connectivity within the Western Balkans and with the European Union.
- Improving accessibility and mobility on the TEN-T Network.
- Building the transport of the future towards a smart, sustainable, green, safe and resilient TEN-T network.
- EU acquis implementation and associated policy reforms.

As per the provisions of Regulation no. 1315/2013, TEN-T comprises a dual-layer structure consisting of the Comprehensive and Core Networks, the latter consisting of prioritized sections of the Comprehensive Network. The total length of the TEN-T road network in the Western Balkans is 5,287.41 km, of which 3,540.55 km are on the Core Network. The TEN-T road network is deemed to include high-quality roads (motorways, expressways, or conventional strategic roads) specially designed and built for motor traffic with adequate levels of safety. Based on the findings of the TCT Secretariat’s Annual Report on Development of the indicative TEN-T extension of Core and Comprehensive Network to the Western Balkans, 45% of Core Network and 52% of Comprehensive network are compliant with TEN-T standards related to infrastructure profile and condition.

³¹ “Five-year Rolling Work Plan for Development of the Indicative TEN-T Extension of the Comprehensive and Core Network in Western Balkans”, Permanent Secretariat of Transport Community, April 2022

2.9.4 Priority projects maturity in North Macedonia

Focusing on road action plan yearly progress 2020-2021, Serbia has achieved 33 percent of the goals set with respect to establishing a functioning and efficient road maintenance system, 22 percent of goals set in ITS deployment and 8 percent of goals set with respect to enhancing of road transport climate resilience and use of alternative fuels.

Following tables, extracted from the strategic document, describe the maturity of Macedonian priority projects in road transportation sector. In Table 89, are represented mature projects, each project is declined from belonging to a transport corridor and to the TEN-T Network and a short description. Finally, are described the cost and the time horizon within which conclusion is expected.

Table 89 Road Transport Project Based on TEN-T Extension of the Comprehensive and Core Network in Western Balkans - Mature priority projects.

Corridor / Route / Node	TEN-T Network	Regional Partner	Project Name	Project cost (M€)	Expected Completion
ECONOMIC AND INVESTMENT PLAN FOR WESTERN BALKANS					
FLAGSHIP 3 – CONNECTING THE COASTAL REGION					
Road projects					
Corridor VIII	Core	MKD	Reconstruction and rehabilitation of road section Tetovo – Gostivar	50	2024
Corridor VIII	Core	MKD	Construction of road section Trebeniste – Struga	45	2023
Corridor VIII	Core	MKD	Construction of road section Struga – Kjafasan	80	2025
Corridor VIII	Core	MKD	Construction of new express road Romanovce – Stracin	88	2025
Corridor VIII	Core	MKD	Construction of road section Gostivar – Kicevo	280	2025
Corridor Xd	Comprehensive	MKD	Construction of road section Prilep – Raec Bridge	8.8	2022
Corridor Xd	Comprehensive	MKD	Construction of expressway Bitola – Medzitlija, with interchange Bitola	50	2022
Corridor Xd	Comprehensive	MKD	Construction of motorway Veles – Prilep	295	2025
Corridor X	Core	MKD	Rehabilitation of road section Gevgelija – Greece border (Bogorodica)	1.5	2022
Corridor X	Core	MKD	Rehabilitation of road section Negotino – TEC Negotino	8	2022
Corridor X	Core	MKD	Rehabilitation of road section Gradsko – Stobi	4.5	2022
Corridor X	Core	MKD	Construction of motorway Bitola – Prilep	130	2025
Corridor X	Core	MKD	Construction and supply of ITS on Corridor X	19	2023

2.9.5 Summary of Road Transport Projects

Considering the analysis of the current transport system (the analysis carried out in the first paragraph), the main existing strategic documents for the area in terms of infrastructure and mobility development and the results of the analysis of existing National and international Strategic Plans presented in the previous paragraph of the volume, are now defined the most relevant road projects classified with respect to the state

of progress and the main objective. Following list of selected interventions also constitutes a geographical database.

The table below includes the road infrastructural projects identified in the country and characterized by type of project (upgrade or new construction), main goal of the intervention and the belonging scenario (baseline 2030/2040, or project). The Baseline scenario has been defined by selecting the main ongoing and planned projects in the Region with a national/regional relevance, and very mature projects whose implementation is already planned and financed. Project scenario describes interventions which are included in a plan/program/strategy but still not financed or not entirely financed.

Table 90 Road projects in North Macedonia

ID	Scenario	Object	Name	Main goal
MK1	Baseline 2030	New construction	Construction of road Kriva Palanka - Deve Bair Section	More efficient and safer road along Kriva Palanka – Deve Bair section. The project is expected to lead to a reduction in accident rates and vehicle operating costs for more than 2,000 people working and/or living along the route as well as for almost 3,000 people who daily cross the border.
MK2	Baseline 2030	New construction	Construction of Motorway A2: section Gostivar - Kicevo	By upgrading the existing road to motorway standards, the investment will facilitate international transport and trade in the region. Linking regional markets to the Durrës Port will support regeneration and help rebalance economic growth.
MK3	Project	New construction	Construction of new motorway BC Blace – Skopje (Stenkovec Interchange)	Vital connection from North Macedonia to Kosovo*, linking domestic markets to the Thessaloniki Port
MK4	Baseline 2030	Upgrade	Rehabilitation of the State road A2, Kumanovo – Stracin, section I (km.0+000 – km.15+195)	Construction of 15,2km new motorway along Corridor VIII
MK5	Baseline 2030	New construction	Construction of corridor VIII- Section between Rankovce-Kriva Palanka Expressway	Construction of 25 km new expressway along Corridor VIII
MK6	Baseline 2030	New construction	Construction of Expressway Raec bridge- Drenovo	Construction of 10.2 km new expressway along Corridor X-d
MK7	Baseline 2030	New construction	Construction of road section Gradsko - Interchange Drenovo as part of road corridor X-d	Construction of 15.5 km single carriageway express road between Gradsko and Drenovo.
MK8	Project	Upgrade	Reconstruction and rehabilitation of road section Tetovo - Gostivar	"Construction of road section Gradsko - Interchange Drenovo as part of road corridor X-d", in length of 15.5 km single carriageway express road.

ID	Scenario	Object	Name	Main goal
MK9	Baseline 2030	Upgrade	Construction of road section Trebeniste - Struga	"Construction of road section Gradsko - Interchange Drenovo as part of road corridor X-d", in length of 15.5 km single carriageway express road.
MK10	Project	Upgrade	Construction of road section Struga - Kjafasan	The project's overall objective is to reduce traffic congestion and pollution while improving road safety.
MK11	Project	New construction	Construction of new express road Romanovce - Stracin	The project's overall objective is to improve mobility, accessibility and road safety
MK12	Baseline 2030	New construction	Construction of road section Prilep - Raec Bridge	Expected benefits include savings in travel time and vehicle operating costs for all types of vehicles; improved road safety; shift of traffic from densely populated urban zones towards the newly built infrastructure
MK13	Project	New construction	Construction of expressway Bitola - Medzitlija, with interchange Bitola	Should provide a fast connection for the country to the port of Igoumenitsa on the Ionian Sea, and also less time for traveling from the Pelagonia region to Thessaloniki.
MK14	Project	Upgrade	Construction of motorway Veles - Prilep	The overall project objective is to improve mobility and reduce traffic pollution while improving road safety
MK15	Baseline 2030	Upgrade	Rehabilitation of road section Gevgelija - Greece border (Bogorodica)	The overall project objective is to reduce traffic congestion and pollution while improving road safety.
MK16	Project	Upgrade	Rehabilitation of road section Negotino - TEC Negotino	The overall project objective is to reduce traffic congestion and pollution while improving road safety.
MK17	Project	Upgrade	Rehabilitation of road section Gradsko - Stobi	The overall project objective is to reduce traffic congestion and pollution while improving road safety.
MK18	Project	Upgrade	Construction of motorway Bitola - Prilep	The overall project objective is to reduce traffic congestion and pollution while improving road safety.
MK19	Baseline 2030	New construction	Construction of the Kicevo - Ohrid Motorway	The highway is expected to have a significant effect on North Macedonia's internal connectivity. Once completed, it will significantly reduce travelling time between the capital AND Ohrid Lake region.

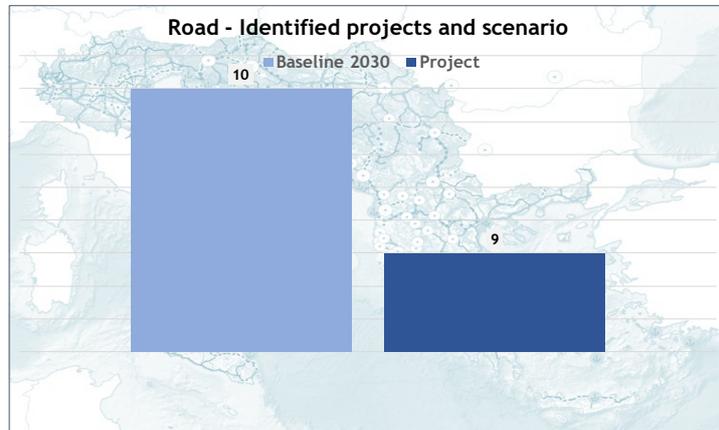


Figure 60 Road projects by scenario, in North Macedonia

19 road interventions selected in North Macedonia are now represented in a map in which is possible to recognize functionally classified current road network (primary, secondary, tertiary) and road project classified by scenario.

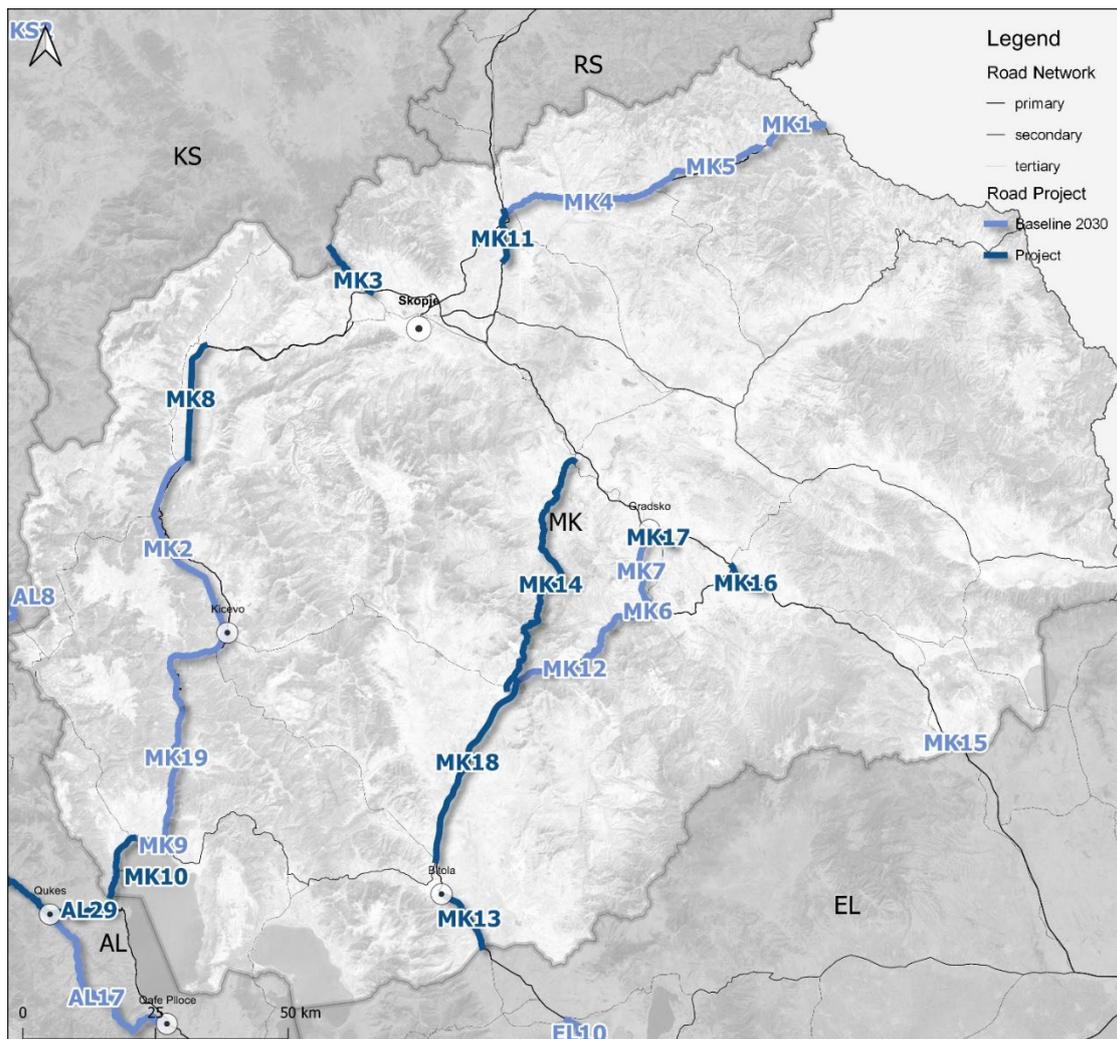


Figure 61 – Map of road project by scenario in North Macedonia.

2.10 Italy

2.10.1 National Transport Strategy and Action Plan

The “National Recovery and Resilience Plan” (NRRP)³² for Italy consists of 132 investments and 58 reforms. They will be supported by € 68.9 billion in grants and €122.6 billion in loans; 37.5% of the plan will support climate objectives and 25.1% of the plan will support the digital transition. All reforms and investments must be implemented within a tight time frame, as the Regulation on the Recovery and Resilience Facility foresees, they have to be completed by August 2026.

Italy’s recovery and resilience plan supports the green transition with key investments in energy efficiency in residential and public buildings (€ 15.3 billion), **sustainable mobility (€ 34 billion)** and development of renewable energies and the circular economy and improvement in waste and water management (€ 11.2 billion). Those investments are accompanied by important reforms aimed at improving the efficiency in the use and management of water resources and local public services, increasing recycling rate, deploying of charging points for electric vehicles, increasing competition in the electric market, improving the functioning of concessions in Italian ports, or simplifying the various legal frameworks for the acceleration of energy efficiency interventions and **transport infrastructure projects**.

The components of the plan contribute to the seven European “flagship programs”³³, represented by some key principles:

- 1) Power up.
- 2) Renovate.
- 3) Recharge and refuel.
- 4) Connect.
- 5) Modernise.
- 6) Scale-up.
- 7) Reskill and upskill.

2.10.2 Proposed objectives and measures

The Guidelines drawn up by the European Commission for the elaboration of the NRRP identify the Components such as the areas in which to aggregate investment projects and the reform of the Plans themselves. Each component reflects reforms and investment priorities in a specific sector or area of intervention, related activities and topics, aimed at addressing specific challenges and forming a coherent package of complementary measures. The components have a sufficient degree of detail to highlight the interconnections between the various measures proposed in them.

³² PIANO NAZIONALE DI RIPRESA E RESILIENZA - NEXT GENERATION EU REPORT -

<https://italiadomani.gov.it/it/home.html>

³³ European Commission, Annual Sustainable Growth Strategy, 17 September 2020.

The Plan is divided into sixteen Components, grouped into six Missions, two of which are also related to transportation system in Italy.

Mission 2, Green Revolution and Ecological Transition, which consists of four following Components:

- C1. Sustainable farming and circular economy.
- C2. Renewable energy, hydrogen, smart grid and sustainable mobility.
- C3. Energy efficiency and building renovation.
- C4. Protection of the territory and the water resource.

Mission 3, Infrastructure for Sustainable Mobility, divided into two Components:

- C1. Investments in the Railway Network.
- C2. Intermodality and Integrated Logistics.

Mission 2: Green Revolution and Ecological Transition

Regarding Mission 2, the resources dedicated by the plan to Mission 2 are 59,46 billion euro, the majority of which is destined to component number two.

M2C2. Renewable energy, hydrogen, smart grid and sustainable mobility includes the following general objectives:

- 1. Increase in the share of energy produced from renewable energy sources in the system, in line with European and national decarbonization objectives.
- 2. Upgrading and digitization of network infrastructures.
- 3. Promotion of the production, distribution and final use of hydrogen, in line with national community strategies
- 4. Development of more sustainable local transport, not only for the purpose of decarbonization but also as a lever for the overall improvement of the quality of life (reduction of air and noise pollution, reduction of congestion and integration of new services).
- 5. Development of international industrial and research and development leadership in the main transition chains.

Among all the planned investment, let's analyze those related to the road transport.

M2C2 Investment 3.3: Experimentation of hydrogen fueling for road transport.

Thanks to this measure, the segment of long-haul trucks could see a penetration significant share of hydrogen up to 5-7 percent of the market by 2030, potentially also thanks to further regulatory pushes of additional effort in terms of climate impact. Strengthening cell technology, a fuel and increased investment in relevant infrastructure such as fuel stations replenishment are the major key enablers to sustain such a market growth. Through these investments, it will be possible to develop around 40 filling stations, giving priority to strategic areas for heavy road transport such as areas close to internal terminals and the routes most densely traveled by long-haul trucks.

M2C2 Investment 4.3: development of electric recharging infrastructures.

To achieve the European objectives on decarbonization, a fleet of around 6 million electric vehicles by 2030 for which an estimated 31,500 fast charging points are needed public. The measure consequently sets itself the objective of building the enabling infrastructures to promote the development of sustainable mobility

and accelerate the transition of the traditional model of fuel-based refueling stations to electric vehicle refueling points. To allow the realization of these objectives, the intervention is aimed at developing 7,500 points of fast charging on the highway and 13,755 in urban centers, as well as 100 experimental charging stations with energy storage technologies.

M2C2 Investment 4.4: Renewal of Bus Fleets, Green Trains

The measure includes three intervention lines:

- Renewal of the bus fleet with low environmental impact vehicles
- Renewal of the train fleet for regional and intercity transport with alternative propulsion vehicles
- Renewal of the vehicle fleet of the Fire Brigade

The renewal of the fleet with low environmental impact buses takes place by accelerating the implementation of the Plan National Strategic for Sustainable Mobility and provides for the progressive renewal of buses for local public transport and the creation of dedicated charging infrastructures. In particular, it is expected the purchase by 2026 of approximately 3,360 low-emission buses. About a third of the resources are earmarked to the main Italian cities.

Mission 3: Infrastructure for Sustainable Mobility

The mission aims to make the most modern, digital and sustainable infrastructure system by 2026, able to respond to the challenge of decarbonization indicated by the European Union with strategies related to the European Green Deal (in particular the "strategy for smart and sustainable mobility", published on 9 December 2020) and to achieve the sustainable development goals identified by the agenda 2030 of the United Nations.

The resources dedicated by the plan to Mission 3 are 25,4 billion euro, the majority of which is destined to component number one, among all the planned investment, let's analyze those related to the road transport.

M3C1. 2 Road Safety 4.0

Among the areas of intervention of the first measure, a part of the planned reforms is focused on road safety. This intervention, which provides for the reforms mentioned here and investments from national resources, concerns the safety, contrast and adaptation to climate change of the road network, with a strong component of technological modernization through a monitoring system advanced digital. The points that compose it are:

- Reform 2.1 Implementation of the Guidelines for risk classification and management, the safety assessment and monitoring of existing bridges.

The reform provides for the implementation of the risk assessment process of existing bridges and viaducts, according to methods defined by the Guidelines of Ministerial Decree 578 of 17 December 2020, which will ensure the homogeneity of the classification and risk management, safety assessment and monitoring of bridges, viaducts, embankments, flyovers and similar works, existing along state roads or motorways managed by Anas S.p.A. or from motorway concessionaires.

- Reform 2.2 Transfer of ownership of works of art (bridges, viaducts and flyovers) relating to second-level roads to owners of first-level roads (motorways and main suburban roads).

This will allow for an increase in the overall safety of the road network, as the maintenance of bridges, viaducts and overpass will be the responsibility of ANAS and/or of the motorway concession companies, which have better planning and maintenance capabilities than individual municipalities or provinces.

2.10.3 Summary of Road Transport Projects

Considering the analysis of the current transport system (the analysis carried out in the first paragraph), the main existing strategic documents for the area in terms of infrastructure and mobility development and the results of the analysis of existing National and international Strategic Plans presented in the previous paragraph of the volume, are now defined the most relevant road projects classified with respect to the state of progress and the main objective. Following list of selected interventions also constitutes a geographical database.

The table below includes the road infrastructural projects identified in the country and characterized by type of project (upgrade or new construction), main goal of the intervention and the belonging scenario (baseline 2030/2040, or project). The Baseline scenario has been defined by selecting the main ongoing and planned projects in the Region with a national/regional relevance, and very mature projects whose implementation is already planned and financed. Project scenario describes interventions which are included in a plan/program/strategy but still not financed or not entirely financed.

Table 91 Road projects in Italy

ID	Scenario	Object	Name	Main goal
IT1	Baseline 2030	Upgrade	Upgrade motorway A4 with a third lane: section Alvisopoli-Portogruaro	Upgrade of motorway section along Baltic - Adriatic Corridor
IT2	Baseline 2030	Upgrade	Upgrade motorway A4 with a third lane: section San Doná di Piave-San Stino di Livenza	Upgrade of motorway section along Baltic - Adriatic Corridor
IT3	Baseline 2030	Upgrade	Upgrade motorway A4 with a third lane: section San Stino di Livenza-Portogruaro	Upgrade of motorway section along Baltic - Adriatic Corridor
IT4	Baseline 2040	New construction	Construction of a new motorway link between Campogalliano and Sassuolo	Construction of a new motorway along Mediterranean corridor
IT5	Baseline 2030	Upgrade	Upgrading of the road infrastructure interconnecting the A2 Motorway Salerno-Reggio Calabria	Upgrading of the road infrastructure along Scandinavian - Mediterranean corridor
IT6	Baseline 2040	New construction	Construction of Cispadana connecting A22-A13 in Emilia-Romagna	Increasing of East-West connections across Calabria Region
IT7	Baseline 2030	New construction	Construction of Pedemontana Veneta highway	Increasing of East-West connections across the Region: construction of Pedemontana Veneta highway
IT8	Baseline 2030	Upgrade	Upgrading of road SS 106 Jonica highway	Faster North-South connections across the Region
IT9	Baseline 2040	New construction	Construction of road Tirreno - Brennero (Ti.Bre)	Costruction of Tirreno-Brennero motorway junction : Parma-Verona section
IT10	Baseline 2030	New construction	Construction of road A18 Siracusa - Gela Motorway: section Ispica-Modica	Increasing of East-West connections across the Region

ID	Scenario	Object	Name	Main goal
IT11	Baseline 2030	Upgrade	Upgrading of road SS 106 Jonica highway	Faster North-South connections across Calabria Region
IT12	Baseline 2030	Upgrade	Port of ORTONA: Accessibility improvement by road	Accessibility road improvement to the port
IT13	Baseline 2030	Upgrade	Port of VASTO: Accessibility improvement by road	Accessibility road improvement to the port
IT14	Baseline 2030	New construction	Port of BARI: "Porta del Levante" road track	Accessibility road improvement to the port
IT15	Baseline 2030	New construction	Port of TARANTO: Accessibility improvement by road	Accessibility road improvement to the port
IT16	Baseline 2030	Upgrade	Port of TRIESTE: Accessibility improvement by road	Accessibility road improvement to the port
IT17	Baseline 2030	Upgrade	Port of VENICE: Accessibility improvement by road	Accessibility road improvement to the port
IT18	Baseline 2030	New construction	Port of Augusta: Securing access to the port and construction of a third connection route between the port districts of the island and the mainland	Accessibility road improvement to the port
IT19	Baseline 2030	Upgrade	Interporto of CATANIA: Accessibility improvement by road	Accessibility road improvement to the port
IT20	Baseline 2030	Upgrade	Port of RIPOSTO: Accessibility improvement by road	Accessibility road improvement to the port
IT21	Baseline 2030	Upgrade	S. AGATA DI MILITELLO: Accessibility improvement by road	Accessibility road improvement to the port
IT22	Baseline 2030	Upgrade	Port of GELA-LICATA: Accessibility improvement by road	Accessibility road improvement to the port
IT23	Baseline 2030	Upgrade	Port and industrial area of TRAPANI: Accessibility improvement by road	Accessibility road improvement to the port
IT24	Baseline 2030	Upgrade	GIOIA TAURO: Functional upgrading of the road link to the TEN-T SS18 network and other junction works with the A2 of Rosarno	Increasing of Rosarno motorway junction along Scandinavian - Mediterranean corridor
IT25	Project	New construction	S.S.81 - Pedemontana Abruzzo Marche - Guardiagrele Est up to the SP junction for Fara San Martino	Increasing of North-South connections across the Region in section Guardiagrele-Fara of Abruzzo-Marche Road link
IT26	Project	New construction	Construction of the variant to the S.S.16 Adriatica in the territory of the Municipality of Silvi (Te).	Faster connection and more capacity in the north-south axis along Baltic-Adriatic corridor: construction of alternative road to SS16 in Silvi municipal area.
IT27	Project	New construction	S.S.81 - Pedemontana Abruzzo Marche - From Capsano di Penna Sant'Andrea to Bisenti	Increasing of North-South connections across the Region in section Capsano-Bisenti of Abruzzo-Marche Road link
IT31	Project	New construction	S.S.150 (of the Valle del Vomano) - Construction works of a variant to the SS.150 between the junction of the A14 at km.4+450 and the S.S.16 at km.422+395 in Scerne di Pineto.	Increasing of East-West connections across the Region, construction of new road link between SS150-SS16 in Scerne di Pineto municipal area.

ID	Scenario	Object	Name	Main goal
IT32	Project	New construction	State Road n.RA12 - Construction works for the third lane.	Faster East-West connections across the Region
IT33	Project	New construction	Completion of ex S.S. 151 road from Cappelle sul Tavo to Penne.	Faster East-West connections across the Region
IT37	Baseline 2030	New construction	SALERNO-POTENZA-BARI: Section I: VALICO DI PAZZANO: S.S. 407 to S.S. 96 BIS connection	Increasing of North-South connections across Basilicata Region
IT38	Baseline 2030	New construction	MURGIA-POLLINO. From BASENTANA to SINNICA (PISTICCI-TURSI) Section I	Increasing of North-South connections across Basilicata Region
IT40	Baseline 2030	New construction	S.S. n. 176 "della Valle del Basento" – Median connection Murgia – Pollino Pisticci – Tursi - Valsinni 3° Section.	Increasing of North-South connections across Basilicata Region
IT41	Project	New construction	Val d'Agri (SS. 598) – Autostrada del Mediterraneo (Villa d'Agri – Padula Buonabitacolo) new connection	Increasing of East-West connections across the Region
IT42	Baseline 2030	Upgrade	Upgrading and improving of E45/E55 road Itinerary	Increasing of North-South connections across Umbria Region
IT44	Baseline 2030	Upgrade	Four-lane adjustment on Route E78 Grosseto-Fano. Le Ville di Monterchi AR - Selci Lama E45 section (Section 4 - lot 7)	Increasing of East-West connections across Umbria Region
IT45	Baseline 2030	Upgrade	Two-lane adjustment on Route E78 Grosseto-Fano. Selci Lama E45-Parnacciano (Guinza) section (Section 5 - lot 1)	Increasing of East-West connections across Umbria Region

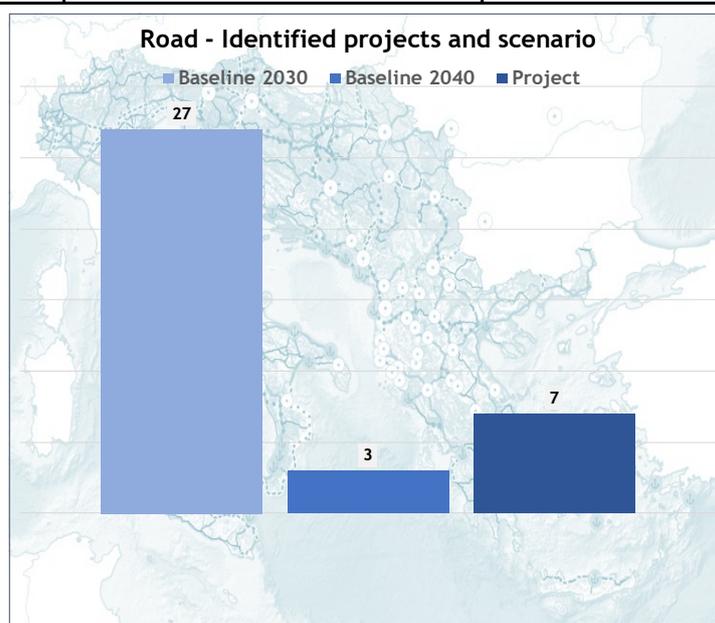


Figure 62 Road projects by scenario, in Italy

37 road interventions selected in Italy are now represented in three maps in which is possible to recognize functionally classified current road network (primary, secondary, tertiary) and road projects classified by scenario.

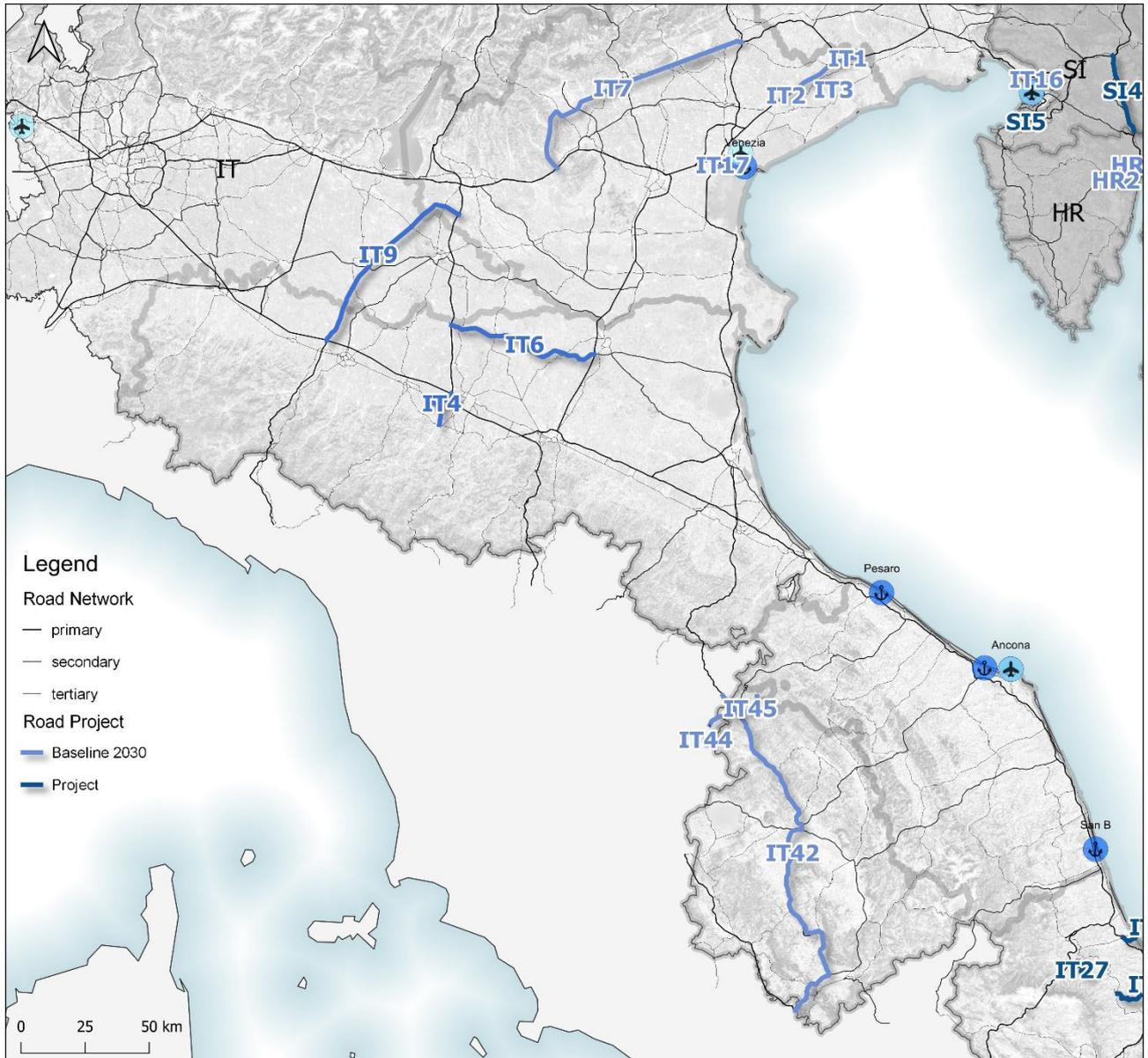


Figure 63 Map of road project by scenario in Italy – Northern area.

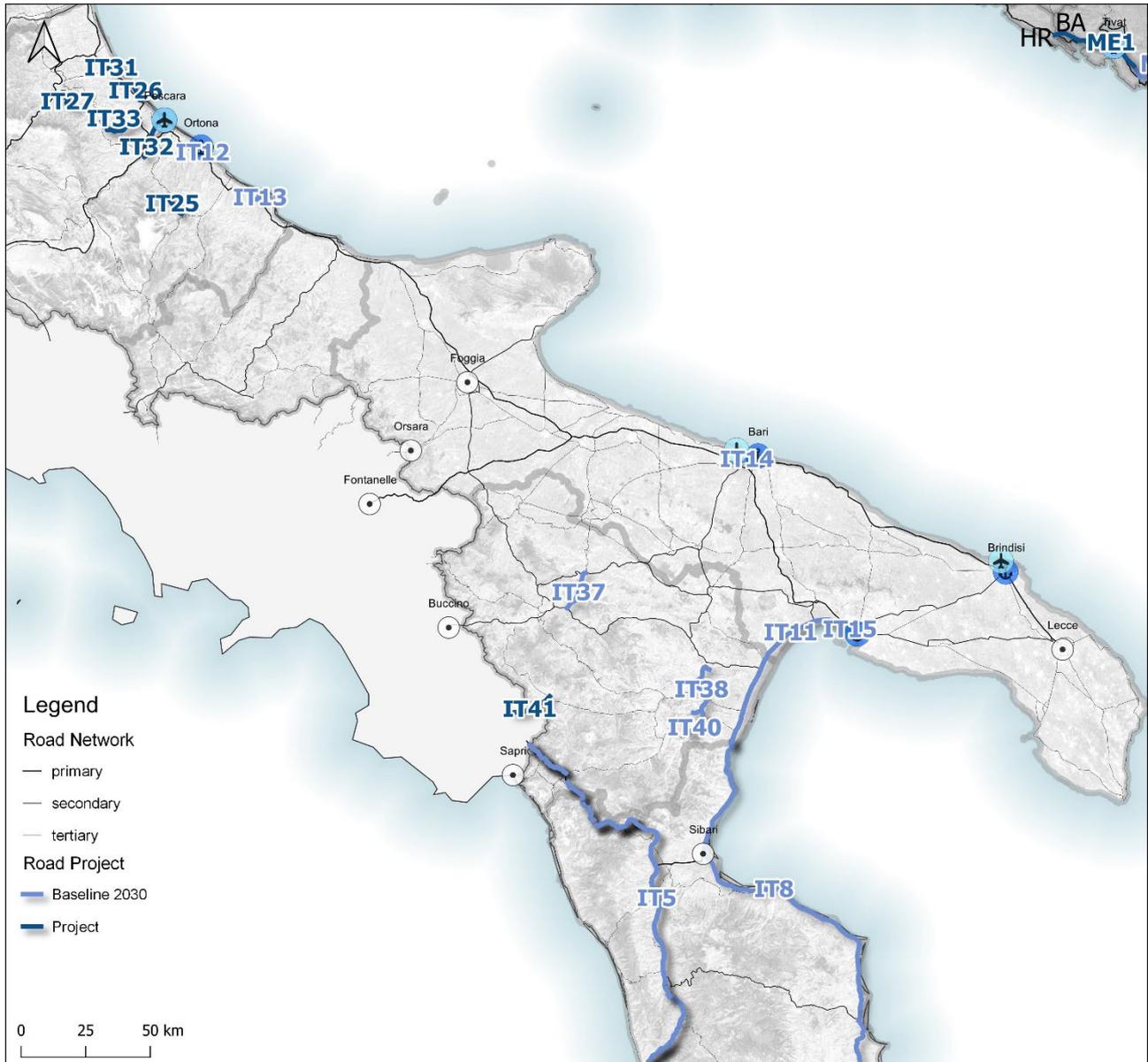


Figure 64 Map of road project by scenario in Italy – Central-southern area.

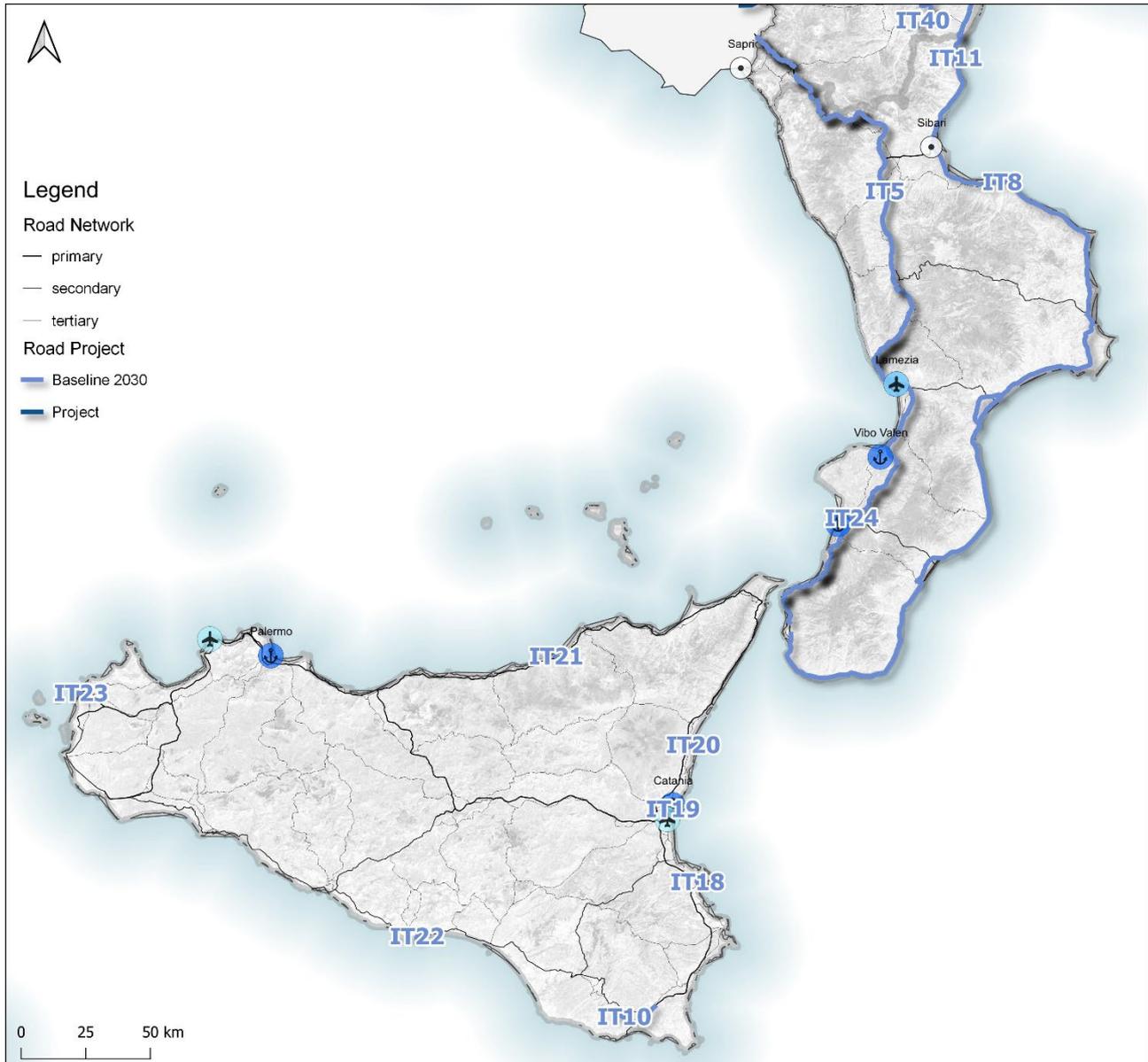


Figure 65 Map of road project by scenario in Italy – Southern area and islands.

2.11 Summary

After analyzing the existing projects for each country, this paragraph presents an overview of the entire EUSAIR region. In the map below are summarized all road interventions distinguished by scenario.



Figure 66 Summarize map of road projects classified by belonging scenario in the EUSAIR region.

The following figure shows all identified projects belonging to Baseline or Project scenario for all countries.

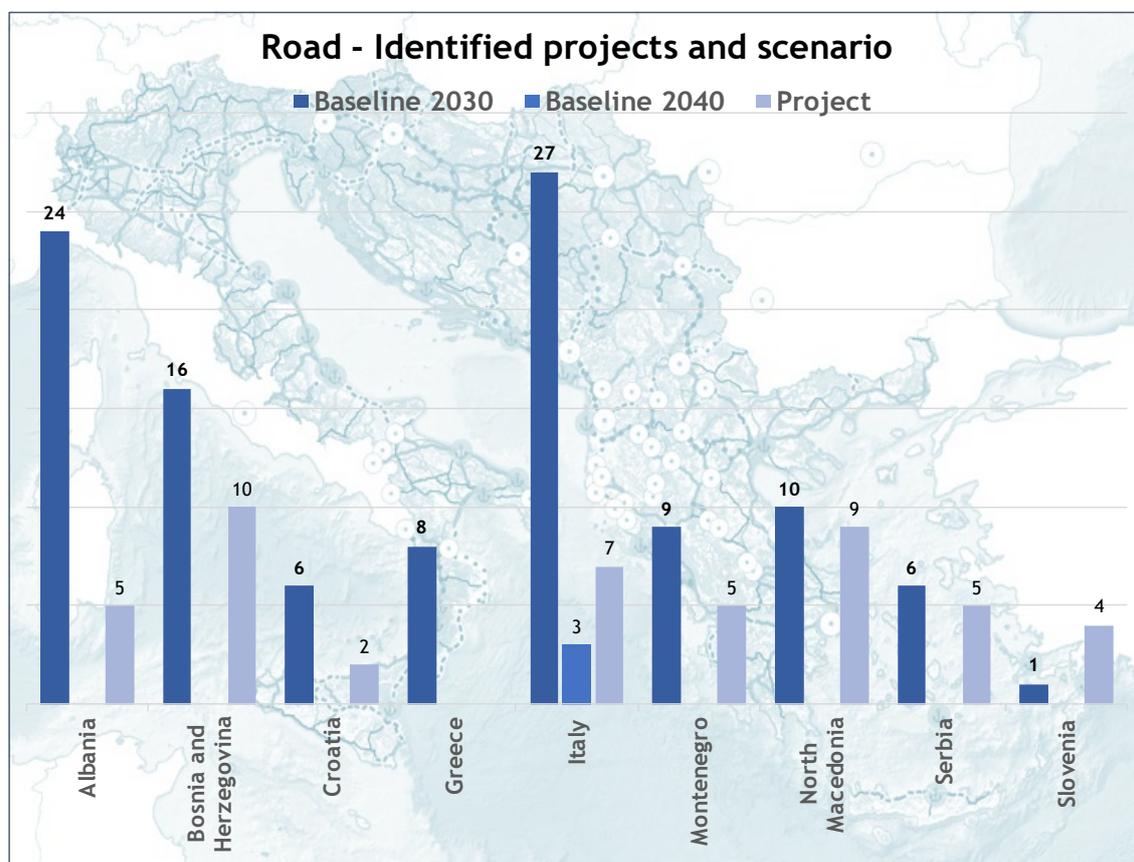


Figure 67 Road projects by scenario, by country

Considering only the “Project” scenario, the identified road interventions are 47. These have been associated also to a specific road corridor, if possible.

The following table shows all road interventions belonging to the Project scenario, described by typology, level of advancement, country of belonging and identified on the basis of the corridor to which they belong (indicated in the last column as “Node”).

Table 92 Road interventions in EUSAIR region – “Project” scenario

ID	Object	Level	Country	Project	Node
AL24	Upgrade	Planned	Albania	Doubling of road Milot -Rreshen	Route 7
AL26	Upgrade	Planned	Albania	Construction of Adriatic – Ionian Corridor (AIC) Section 1: Muriqan – Baldreni	Adriatic-Ionian Corridor
AL27	Upgrade	Planned	Albania	AIC Section 2: Baldreni (starting from Lezha Bypass) – Milot	Adriatic-Ionian Corridor
AL28	Upgrade	Planned	Albania	Construction of a 23.8 km -long highway between Gjirokaster and Kakavije on the Adriatic - Ionian Corridor	Adriatic-Ionian Corridor
AL29	Upgrade	Planned	Albania	Rehabilitation of Corridor VIII, connection with Northern Macedonia. Section Elbasan - Qafe Thane	Corridor VIII
BA13	New construction	Planned	Bosnia and Herzegovina	Construction of the cross-border bridge over the river Sava (Bosnia and Herzegovina - Croatia R2a Road Interconnection)	Corridor Vc
BA14	New construction	Planned	Bosnia and Herzegovina	Corridor Vc: Construction of Johovac-Vukosavlje motorway	Corridor Vc
BA15	New construction	Planned	Bosnia and Herzegovina	Corridor Vc: Construction of the Medakovo - Ozimica Motorway	Corridor Vc
BA16	New construction	Planned	Bosnia and Herzegovina	Constuction of corridor Vc- section between Mostar North-Mostar South motorway	Corridor Vc

ID	Object	Level	Country	Project	Node
BA17	New construction	Planned	Bosnia and Herzegovina	Motorway Banja Luka - Prijedor	Corridor Vc
BA22	Upgrade	Planned	Bosnia and Herzegovina	Improvement and construction of the road route Sarajevo - Foca (Brod na Drini) - Hum (Scepan Polje) with the interstate bridge at the border BIH/MNE	Route 2b
BA23	New construction	Planned	Bosnia and Herzegovina	Construction of the expressway section Turbe – Nevića Polje –Lašva	Route 2a
BA24	Upgrade	Planned	Bosnia and Herzegovina	Betterment of the road section Banja Luka (Bypass) - Jajce - Lasva, part in FBiH Ugar - Jajce - Lasva	Route 2a
BA25	Upgrade	Planned	Bosnia and Herzegovina	Improvement (betterment) of the road route Banja Luka - entity border (Ugar), construction of Banja Luka Bypass	Route 2a
BA26	New construction	Planned	Bosnia and Herzegovina	Construction of expressway Sarajevo - Visegrad - Border BiH/SRB	Route 3
HR5	New construction	Planned	Croatia	Construction of road A5 Osijek - HU border	Corridor Vc: A5
HR8	New construction	Planned	Croatia	Construction of road DC 10 Vrbovec - Križevci - Koprivnica - Hungarian border towards Kaposvar	A12
IT25	New construction	Planned	Italy	S.S.81 - Pedemontana Abruzzo Marche - Guardiagrele Est up to the SP junction for Fara San Martino	
IT26	New construction	Planned	Italy	Construction of the variant to the S.S.16 Adriatica in the territory of the Municipality of Silvi (Te).	Baltic - Adriatic
IT27	New construction	Planned	Italy	S.S.81 - Pedemontana Abruzzo Marche - From Capsano di Penna Sant'Andrea to Bisenti	
IT31	New construction	Planned	Italy	S.S.150 (of the Valle del Vomano) - Construction works of a variant to the SS.150 between the junction of the A14 at km.4+450 and the S.S.16 at km.422+395 in Scerne di Pineto.	Baltic - Adriatic
IT32	New construction	Planned	Italy	State Road n.RA12 - Construction works for the third lane.	
IT33	New construction	Planned	Italy	Completion of ex S.S. 151 road from Cappelle sul Tavo to Penne.	
IT41	New construction	Planned	Italy	Val d'Agri (SS. 598) – Autostrada del Mediterraneo (Villa d'Agri – Padula Buonabitacolo) new connection	
ME1	New construction	Planned	Montenegro	Construction of Adriatic Motorway: section Border with Croatia - Bijela (Bypass Herceg Novi & Herceg Novi-Bijela)	Adriatic-Ionian Corridor
ME12	New construction	Planned	Montenegro	Construction of Adriatic Motorway: Bar - Albanian Border	Adriatic-Ionian Corridor
ME13	New construction	Planned	Montenegro	Highway Bar-Boljare: section Mateševo-Andrijevic	
ME14	New construction	Planned	Montenegro	Highway Bar-Boljare:section Andrijevic-Boljare (Border with Serbia)	
ME5	New construction	Planned	Montenegro	Construction of Motorway Bar-Boljare: section Durmani - Farmaci	
MK10	Upgrade	Planned	North Macedonia	Construction of road section Struga - Kjafasan	Corridor VIII
MK11	New construction	Planned	North Macedonia	Construction of new express road Romanovce - Stracin	Corridor VIII
MK13	New construction	Planned	North Macedonia	Construction of expressway Bitola - Medzitlija, with interchange Bitola	Corridor Xd
MK14	Upgrade	Planned	North Macedonia	Construction of motorway Veles - Prilep	Corridor Xd
MK16	Upgrade	Planned	North Macedonia	Rehabilitation of road section Negotino - TEC Negotino	Corridor X
MK17	Upgrade	Planned	North Macedonia	Rehabilitation of road section Gradsko - Stobi	Corridor X
MK18	Upgrade	Planned	North Macedonia	Construction of motorway Bitola - Prilep	Corridor X
MK3	New construction	Planned	North Macedonia	Construction of new motorway BC Blace – Skopje (Stenkovec Interchange)	Corridor VIII
MK8	Upgrade	Planned	North Macedonia	Reconstruction and rehabilitation of road section Tetovo - Gostivar	Corridor VIII

ID	Object	Level	Country	Project	Node
RS10	New construction	Planned	Serbia	Construction of highway E-761/ M-5/ Bosnia and Herzegovina Border - Kotroman - Uzice - Kotroman	Route 3
RS11	New construction	Planned	Serbia	Construction of Highway Romanian border - Vršac – Belgrade and connection to Corridor X	Route 4
RS2	New construction	Planned	Serbia	Construction of the Belgrade bypass: section from Bubanj Potok to Pančevo	Corridor X
RS6	New construction	Planned	Serbia	Construction of the A2 Motorway: section between Pozega-Border with Montenegro	Corridor XI
RS9	New construction	Planned	Serbia	Construction of the Highway R7: section Niš – Merdare	Route 7
SI1	New construction	Planned	Slovenia	Construction of new interconnecting junction between the existing Ljubljana motorway and the regional road network: link road Brezovica/Dravograd	
SI3	Upgrade	Planned	Slovenia	Upgrade road Draženci – Gruškovje	
SI4	New construction	Planned	Slovenia	Construction of road Postojna - Jelšane	
SI5	New construction	Planned	Slovenia	TIR Truck Park Sermin	Baltic - Adriatic, Mediterranean

Following figure shows Project scenario in the region represented in a map.



Figure 68 Map of road interventions in the EUSAIR region – “Project” scenario.

Looking at the “Baseline” Scenario, identified interventions are 113. Below, these are represented in a summary table describing the type of intervention (upgrade/new construction), the level of advancement

(when information is available), the Country they belong to, and the node/road corridor interested. The table is followed by a summary map showing Baseline scenario in the region.

Table 93 Road interventions in EUSAIR region – “Baseline” scenario

ID	Object	Level	Country	Project	Node
AL1	Upgrade	Completed	Albania	Rehabilitation and upgrading of the road between Fier and Tepelene	Adriatic-Ionian Corridor
AL10	New construction	Under construction	Albania	Construction of Vlora river road: section Vlora-Qeparo	
AL11	New construction	Under construction	Albania	Construction of Kardhiq-Delvina road	
AL12	New construction	Under construction	Albania	Reconstruction and upgrade of the Road Erseke - Leskovik in Korca region	
AL13	New construction	Planned and financed	Albania	Construction of the Llogara tunnel in the road section Oriku-Himara	Sh8 expressway Vlora - Saranda
AL14	New construction	Planned and financed	Albania	Construction of road Lezha bypass	Adriatic-Ionian Highway/Expressway(Route 2b/Corridor VIII/ Route 2c)
AL15	New construction	Planned and financed	Albania	Construction of Tirana bypass	Adriatic-Ionian Highway/Expressway (Route 2b/Corridor VIII/ Route 2c)
AL16	New construction	Completed	Albania	Construction of road Tirana - Elbasan	Corridor VIII
AL17	New construction	Planned and financed	Albania	Construction of road Qukes Qafe - Ploce	Corridor VIII
AL18	New construction	Planned and financed	Albania	Construction of road Milot - Thumane	Route 7 - Adriatic-Ionian Corridor
AL19	Upgrade	Planned and financed	Albania	Upgrade of road Thumane - Kashar	Adriatic-Ionian Corridor
AL2	New construction	Completed	Albania	Construction of a new two-lane motorway between Levan and VloE	Expressway (Route 2b/Corridor VIII/ Route 2c)
AL20	New construction	Planned and financed	Albania	Construction of road Kashar - Peze Helmes	Adriatic-Ionian Corridor
AL21	New construction	Planned and financed	Albania	Construction of road Peze Helmes - Luzi Vogel	Adriatic-Ionian Corridor
AL22	Upgrade	Planned and financed	Albania	Upgrade of road Luzi Vogel / Lekaj – I/C Rrogozhine	Adriatic-Ionian Corridor
AL23	Upgrade	Planned and financed	Albania	Upgrade of road Rrogozhine - beginning of Fier Bypass	Adriatic-Ionian Corridor
AL25	New construction	Under construction	Albania	Construction of Shkodra bypass	Route 7
AL3	New construction	Completed	Albania	Construction of the Tepelene and Gjirokaster bypass	Adriatic-Ionian Corridor
AL4	New construction	Completed	Albania	Construction of the Fier bypass	Route 2b - Adriatic-Ionian Corridor
AL5	New construction	Under construction	Albania	Construction of Tirana Ring Road	
AL6	Upgrade	Under construction	Albania	Widening of Tirana - Durres motorway	SH2
AL7	Upgrade	Planned	Albania	Reconstruction of Tirana-Durres Road on the direction Tirana-Ndroq -Plepa	SH56
AL8	New construction	Under construction	Albania	Construction of Arbri Road: section Tirana-Peshkopi	Expressway (Route 2b/Corridor VIII/ Route 2c)
AL9	New construction	Completed	Albania	Construction of Vlora bypass	Corridor VIII
BA1	New construction	Under construction	Bosnia and Herzegovina	Corridor Vc: Construction of Svilaj - Odžak / Svilaj Bridge	Corridor Vc
BA10	New construction	Planned and financed	Bosnia and Herzegovina	Construction of Road Corridor Vc: PUTNIKOVO BRDO - MEDAKOVO	Corridor Vc
BA11	New construction	Planned and financed	Bosnia and Herzegovina	Construction of Road Corridor Vc: POPRIKUŠE - NEMILA	Corridor Vc

ID	Object	Level	Country	Project	Node
BA12	New construction	Planned and financed	Bosnia and Herzegovina	Construction of Road Corridor Vc: TUNEL KVANJ - BUNA	Corridor Vc
BA18	New construction	Under construction	Bosnia and Herzegovina	Construction of the Ozimica - Poprikuse Motorway	Corridor Vc
BA19	New construction	Planned and financed	Bosnia and Herzegovina	Construction of Road Corridor Vc: NEMILA-VRANDUK	Corridor Vc
BA2	New construction	Under construction	Bosnia and Herzegovina	Construction of Road Corridor Vc: TUNNEL ZENICA - DONJA GRADANICA	Corridor Vc
BA20	New construction	Under construction	Bosnia and Herzegovina	Construction of Road Corridor Vc: Construction of the Vranduk - Ponirak Motorway	Corridor Vc
BA21	New construction	Under construction	Bosnia and Herzegovina	Corridor Vc: Construction of the Klopce - Drivusa Motorway	Corridor Vc
BA3	New construction	Under construction	Bosnia and Herzegovina	Construction of Road Corridor Vc: BUNA - POČITELJ	Corridor Vc
BA4	New construction	Under construction	Bosnia and Herzegovina	Construction of Road Corridor Vc: PONIRAK - TUNNEL ZENICA	Corridor Vc
BA5	New construction	Under construction	Bosnia and Herzegovina	Construction of Road Corridor Vc: JOHOVAC - RUDANKA INTERCHANGE	Corridor Vc
BA6	New construction	Under construction	Bosnia and Herzegovina	Construction of Road Corridor Vc: TARČIN - IVAN SUBSECTION I	Corridor Vc
BA7	New construction	Under construction	Bosnia and Herzegovina	Construction of Road Corridor Vc: TARČIN - IVAN SUBSECTION II / TUNNEL IVAN	Corridor Vc
BA8	New construction	Under construction	Bosnia and Herzegovina	Construction of Road Corridor Vc: POČITELJ - ZVIROVIĆI	Corridor Vc
BA9	New construction	Planned and financed	Bosnia and Herzegovina	Construction of Road Corridor Vc: RUDANKA - PUTNIKOVO BRDO	Corridor Vc
HR1	New construction	Under construction	Croatia	Construction of Croatia's Istrian Y motorway: section Pazin-Ucka	
HR2	New construction	Under construction	Croatia	Construction of Ucka tunnel	A8
HR3	New construction	Under construction	Croatia	Construction of road Osijek - Beli Manastir	Corridor Vc: A5
HR4	New construction	Under construction	Croatia	Construction of the Pelješac bridge	
HR6	New construction	Planned and financed	Croatia	Construction of road A7 Križišće to Žuta Lokva: section A7 Rupa - Rijeka - Žuta Lokva	A7
HR7	New construction	Planned and financed	Croatia	Construction of road A11 Lekenik – Sisak	A11
EL1	New construction	Under construction	Greece	Construction of A3 Motorway: section Xyniada - Lamia	Orient/East-Med Corridor
EL2	New construction	Completed	Greece	Construction of A3 Motorway: section Grevena-Trikala	Orient/East-Med Corridor
EL3	New construction	Completed	Greece	Construction of road Egnatia Odos Vertical Axis: section of Alexandroupolis-Ormenio (missing section between intersection Egnatia Odos-Greek National Road 51 till the border with Bulgaria)	Orient/East-Med Corridor
EL4	New construction	Under construction	Greece	Construction of road Egnatia Odos Vertical Axis: section of Xanthi – Ehinós – GR/BG Border	Orient/East-Med Corridor
EL5	New construction	Completed	Greece	Construction of road Egnaria Odos Vertical Axes: section of Moudania-Potidaia	Orient/East-Med Corridor
EL6	New construction	Completed	Greece	Construction of Aktio-Amvrakia linking E55 and A5 motorway	Orient/East-Med Corridor
EL7	New construction	Under construction	Greece	Construction of A5 Motorway: southern section Patra-Pyrgos	Orient/East-Med Corridor
EL8	New construction	Completed	Greece	Construction of road North Crete Road Axis (A90 Motorway)	Orient/East-Med Corridor

ID	Object	Level	Country	Project	Node
IT1	Upgrade	Under construction	Italy	Upgrade motorway A4 with a third lane: section Alvisopoli-Portogruaro	Baltic - Adriatic
IT10	New construction	Under construction	Italy	Construction of road A18 Siracusa - Gela Motorway: section Ispica-Modica	
IT11	Upgrade	Completed	Italy	Upgrading of road SS 106 Jonica highway	
IT12	Upgrade		Italy	Port of ORTONA: Accessibility improvement by road	Baltic - Adriatic, Mediterranean
IT13	Upgrade		Italy	Port of VASTO: Accessibility improvement by road	Baltic - Adriatic, Mediterranean
IT14	New construction		Italy	Port of BARI: "Porta del Levante" road track	Scandinavian - Mediterranean
IT15	New construction		Italy	Port of TARANTO: Accessibility improvement by road	Scandinavian - Mediterranean
IT16	Upgrade		Italy	Port of TRIESTE: Accessibility improvement by road	Scandinavian - Mediterranean
IT17	Upgrade		Italy	Port of VENICE: Accessibility improvement by road	Scandinavian - Mediterranean
IT18	New construction		Italy	Port of Augusta: Securing access to the port and construction of a third connection route between the port districts of the island and the mainland	Scandinavian - Mediterranean
IT19	Upgrade		Italy	Interporto of CATANIA: Accessibility improvement by road	Scandinavian - Mediterranean
IT2	Upgrade	Planned and financed	Italy	Upgrade motorway A4 with a third lane: section San Doná di Piave-San Stino di Livenza	Baltic - Adriatic
IT20	Upgrade		Italy	Port of RIPOSTO: Accessibility improvement by road	Scandinavian - Mediterranean
IT21	Upgrade		Italy	S. AGATA DI MILITELLO: Accessibility improvement by road	Scandinavian - Mediterranean
IT22	Upgrade		Italy	Port of GELA-LICATA: Accessibility improvement by road	
IT23	Upgrade		Italy	Port and industrial area of TRAPANI: Accessibility improvement by road	Scandinavian - Mediterranean
IT24	Upgrade		Italy	GIOIA TAURO: Functional upgrading of the road link to the TEN-T SS18 network and other junction works with the A2 of Rosarno	Scandinavian - Mediterranean
IT3	Upgrade	Planned and financed	Italy	Upgrade motorway A4 with a third lane: section San Stino di Livenza-Portogruaro	Baltic - Adriatic
IT37	New construction		Italy	SALERNO-POTENZA-BARI: Section I: VALICO DI PAZZANO: S.S. 407 to S.S. 96 BIS connection	
IT38	New construction		Italy	MURGIA-POLLINO. From BASENTANA to SINNICA (PISTICCI-TURSI) Section I	
IT40	New construction		Italy	S.S. n. 176 "della Valle del Basento" – Median connection Murgia – Pollino Pisticci – Tursi - Valsinni 3° Section.	
IT42	Upgrade		Italy	Upgrading and improving of E45/E55 road Itinerary	
IT44	Upgrade		Italy	Four-lane adjustment on Route E78 Grosseto-Fano. Le Ville di Monterchi AR - Selci Lama E45 section (Section 4 - lot 7)	
IT45	Upgrade		Italy	Two-lane adjustment on Route E78 Grosseto-Fano. Selci Lama E45-Parnacciano (Guinza) section (Section 5 - lot 1)	
IT5	Upgrade	Completed	Italy	Upgrading of the road infrastructure interconnecting the A2 Motorway Salerno-Reggio Calabria	Scandinavian - Mediterranean
IT7	New construction	Under construction	Italy	Construction of Pedemontana Veneta highway	

ID	Object	Level	Country	Project	Node
IT8	Upgrade	Under construction	Italy	Upgrading of road SS 106 Jonica highway	
IT4	New construction	Planned and financed	Italy	Construction of a new motorway link between Campogalliano and Sassuolo	Mediterranean
IT6	New construction	Planned and financed	Italy	Construction of Cispadana connecting A22-A13 in Emilia-Romagna	
IT9	New construction	Under construction	Italy	Construction of road Tirreno - Brennero (Ti.Bre)	
KS1	New construction	Under construction	Kosovo*	Construction of Pristina - Mitrovica Highway	Route 6
KS2	New construction	Planned and financed	Kosovo*	Construction of the Kijev - Zahaq highway	Route 6b
KS3	New construction	Planned and financed	Kosovo*	Construction of Pristina - Merdare Motorway	Route 7 WB
ME15	New construction	Under construction	Montenegro	Highway Bar-Boljare: section Smokovac - Mateševo	Route 4
ME16	Upgrade	Under construction	Montenegro	Reconstruction and widening of road section M-2 Rozaje - Spiljani, including works on 5 bridges and 10 tunnels	Route 6
ME17	Upgrade	Under construction	Montenegro	Reconstruction and widening of road section M-2 Berane - Bijelo polje - Mojkovac, length: 43 km	
ME18	Upgrade	Completed	Montenegro	Reconstruction and widening of road section M-3 Danilovgrad - Podgorica; length: 15 km (2+2 traffic lanes), including works on 5 bridges and 5 roundabouts.	Route 2b
ME2	Upgrade	Under construction	Montenegro	Reconstruction of road Scepan Polje (BiH Border) - Pluzine	
ME3	New construction	Planned and financed	Montenegro	Construction of Budva Bypass	Adriatic-Ionian Corridor
ME4	New construction	Planned and financed	Montenegro	Highway Bar-Boljare: Construction of Podgorica bypass (section Smokovac – Tološi – Farmaci)	
ME6	New construction	Completed	Montenegro	Reconstruction of the road Niksic - Vilusi	
ME7	Upgrade	Under construction	Montenegro	Reconstruction of the road Mojkovac-Lubnice: section Mojkovac-Vragodo	
MK1	New construction	Under construction	North Macedonia	Construction of road Kriva Palanka - Deve Bair Section	Corridor VIII
MK12	New construction	Under construction	North Macedonia	Construction of road section Prilep - Raec Bridge	Corridor Xd
MK15	Upgrade	Under construction	North Macedonia	Rehabilitation of road section Gevgelija - Greece border (Bogorodica)	Corridor X
MK19	New construction	Under construction	North Macedonia	Construction of the Kicevo - Ohrid Motorway	Corridor VIII
MK2	New construction	Planned and financed	North Macedonia	Construction of Motorway A2: section Gostivar - Kicevo	Corridor VIII
MK4	Upgrade	Under construction	North Macedonia	Rehabilitation of the State Road A2, Kumanovo – Stracin, section I (km.0+000 – km.15+195)	Corridor VIII
MK5	New construction	Under construction	North Macedonia	Construction of corridor VIII- Section between Rankovce-Kriva Palanka Expressway	Corridor VIII
MK6	New construction	Under construction	North Macedonia	Construction of Expressway Raec bridge-Drenovo	Corridor X
MK7	New construction	Under construction	North Macedonia	Construction of road section Gradsko - Interchange Drenovo as part of road corridor X-d	Corridor Xd
MK9	Upgrade	Under construction	North Macedonia	Construction of road section Trebeniste - Struga	Corridor VIII
RS1	New construction	Under construction	Serbia	Construction of the Belgrade bypass: section from Ostruznica to Bubanj Potok	Corridor X

ID	Object	Level	Country	Project	Node
RS3	New construction	Completed	Serbia	Construction of the road Kragujevac - Batočina	Corridor X
RS4	New construction	Under construction	Serbia	Construction of the A5 Motorway section between Pojate and Preljina (Morava Corridor)	Route 5
RS5	New construction	Under construction	Serbia	Construction of the A2 Motorway: section Preljina - Požega	Route 4
RS7	New construction	Under construction	Serbia	Construction of the Fruski Korridor: section Ruma - Novi Sad	Route 9a
RS8	New construction	Completed	Serbia	Route Paracin-Zajecar-Negotin: connection between Corridor IV in Bulgaria to Corridor X in Serbia	Corridor IV to Corridor X
SI2	New construction	Under construction	Slovenia	Construction of Karawanken 2nd tube	Baltic - Adriatic, Mediterranean



Figure 69 Map of road interventions in the EUSAIR region – “Baseline” scenario.

3 Conclusions and policy recommendations for the Road transport sector

In this chapter a recap of the findings of the previous chapters is proposed, in order to highlight the main issues of the sector in the macro-region and its outlook. Moreover, suggestions for development guidelines are being proposed.

3.1 Key issues

This paragraph presents in very short terms the most relevant issues highlighted by the analysis carried out on the EUSAIR road network, classifying them by type of policy area concerned. It must be considered that some interventions may cause more than one a single impact on, for instance, accessibility of safety and security, therefore the table below shows the most relevant impact the identified key issues may produce.

Table 94.A Identified Key Issues by country, concerning Safety and security

KEY ISSUE	ALBANIA	BOSNIA AND HERZEGOVINA	MONTENEGRO	SERBIA	CROATIA	SLOVANIA	GREECE	NORTH MACEDONIA	ITALY
Missing road connections to rural areas									
Traffic congestion around urban areas due to missing road bypasses or insufficient capacity									
High number of road accidents									
Very limited extension of Motorway network									
High share of obsolete road sections (roads made of gravel or soil)									

Table 95.B Identified Key Issues by country, concerning Sustainability

KEY ISSUE	ALBANIA	BOSNIA AND HERZEGOVINA	MONTENEGRO	SERBIA	CROATIA	SLOVANIA	GREECE	NORTH MACEDONIA	ITALY
Traffic congestion around urban areas due to missing road bypasses or insufficient capacity									
High motorisation rate									
Low performance of public transport services									
Long travel time due to the poor condition of the network									
Limited diffusion of electric charging stations and/or lack of legal framework to develop such network									

Table 96.C Identified Key Issues by country, concerning Connectivity

KEY ISSUE	ALBANIA	BOSNIA AND HERZEGOVINA	MONTENEGRO	SERBIA	CROATIA	SLOVANIA	GREECE	NORTH MACEDONIA	ITALY
Missing road connections to rural areas									
Lack of capacity in sections candidate to become part of the TEN-T extension									
Traffic congestion around urban area due to missing road bypasses or insufficient capacity									
Some border checkpoint located in local roads									
Very limited ITS deployment									
Low maximum speed allowed on road network with respect to road category									
Very limited extension of the Motorway network									

KEY ISSUE	ALBANIA	BOSNIA AND HERZEGOVINA	MONTENEGRO	SERBIA	CROATIA	SLOVANIA	GREECE	NORTH MACEDONIA	ITALY
Long travel time due to the poor condition of the network									
Road network and crossborder points sufferig the seasonal peak of traffic									
Most of the borders are with non-EU countries (non-Schengen)									

3.2 Outlook

The main interventions for the improvement of the road sector in the region are presented in this paragraph. Looking at the baseline scenario of road interventions, described in the summary of chapter 2, all countries in the region have developed projects that improve **safety, security and resilience** of the road network and significant attention is dedicated to projects aimed at **enhancing connectivity**, with a focus on the quality of infrastructure for cross border road sections.

In particular, the following projects can be underlined (see Chapter 2, Table 93):

- **Albania** have developed two interventions in this direction (IDs AL8, AL17): the construction of Arbri Road from Tirana to Peshkopi, which will improve connection with North Macedonia and the construction of road Qukes Qafe – Ploce on Corridor VIII, which will allow faster connection between the port of Durres and other Balkan countries, making Albania a more convenient place to carry out the transit of transport from the Balkan countries to Europe and vice versa.
- **Bosnia and Herzegovina** will improve border crossing with Croatia by the construction of Svilaj - Odžak / Svilaj Bridge on corridor Vc (ID BA1).
- **Montenegro** is implementing the border road network through three ongoing projects. These interventions are the reconstruction of road Scepan Polje (BiH Border) – Pluzine, along route 2b with an expected cost of 139 million € (ID ME2), the reconstruction of the road Nikisic – Vilusi (BiH Border) with an expected cost of 3.6 million € (ID ME6), and the reconstruction and widening of road section Rozaje - Spiljani, including works on 5 bridges and 10 tunnels (ID ME16). The main objectives set are respectively: increase the level of services of the road through improved situation plan and cross sections geometry, increased road safety level, significant road protection against falls during winter periods, with large deviations from the route of the existing road, for the first project, and a faster connection and more capacity along east west axis across the region, for the second and the third.

- **Serbia** is increasing East-West connections across the Region with the construction of a new expressway connecting Corridor IV in Bulgaria to Corridor X in Serbia: the route Paracin – Zajecar – Negotin (ID RS8).
- **Croatia** is improving the connection with Bulgaria through the construction of a new section of the A5 road: Osijek - Beli Manastir (ID HR3).
- In **Slovenia**, the construction of Karawanken 2nd tube in Slovenia, will connect the A2 motorway in Slovenia with the A11 motorway in Austria on the Mediterranean and Baltic Adriatic Core Network Corridors (ID SI2).
- **Greece** is working on “building stronger international land connectivity”³⁴ by the definition of many interventions. Greece shares a significant land border with Albania, North Macedonia and Bulgaria, with two crossings to Turkey at Kastanies and Kipoi. With all borders being non-Schengen borders, and all except the Bulgarian border being external borders of the European Union, this presents significant challenges in relation to cross border trade. Nevertheless, the integration of commercial and social fabric across these borders is also hampered by very weak infrastructure, as well as difficult border crossing procedures. One objective is therefore to improve land connectivity so as to improve the range of trade routes to, from and through Greece, and to create synergies with neighbouring freight nodes on the European network. Within the baseline scenario of road transport projects, we find the improvement of border connection with Bulgaria with the construction of road Egnatia Odos Vertical Axis: section of Alexandroupolis - Ormenio (missing section between intersection Egnatia Odos-Greek National Road 51 till the border with Bulgaria) (ID EL3); and section of Xanthi – Ehinós – GR/BG Border (ID EL4).
- As concerns **North Macedonia**, the Pan European Corridor VIII represents the main East-West connection between the Ionian and the Black Seas. The route of Corridor VIII runs through the Countries of Albania, North Macedonia and Bulgaria, therefore, the construction and upgrade of road sections on this corridor, mainly in North Macedonia, is crucial. Baseline scenario presents six interventions along corridor VIII across North Macedonia connection the Country with Bulgaria and Albania, from East to West they are: new construction of road section Kriva Palanka – Deve Bair (ID MK1), new construction of section between Rankovce and Kriva Palanka (ID MK5), rehabilitation of the state road A2 between Kumanovo and Stracin with an expected cost of 88 million € (ID MK4), new construction of A2 motorway section Gostivar – Kicevo with an expected cost of 280 million € (ID MK2), new construction of the motorway section Kicevo – Ohrid (ID MK19), upgrade of road section Trebeniste – Struga with an expected cost of 45 million € (ID MK9). North Macedonia also foresees the improvement of the road connection with Greece with the upgrade of road section Gevgelija – Bogorodica at Greece border (ID MK15).
- In **Italy**, several projects are increasing the safety and efficiency of the road network, such as – for example - the realization of the Cispadana regional highway connecting A22 and A13 in Emilia Romagna (IT6), the construction of the Pedemontana Veneta highway (I7), and the upgrading of SS106 Jonica highway (IT8).

³⁴ Third proposed Pillar, part of the strategy of “National Transport Plan for Greece”, Final Transport Plan Report. June 2019

The baseline scenario was defined within the context of the present Masterplan with a focus on infrastructural projects; however, in order directly aim to improve the **sustainability of the road system**, “soft” measures are required and envisaged. As outlined in the EU’s Economic and Investment Plan for the Western Balkans, approximately EUR 5 billion, including EUR 2 billion in grants, will be focused on advancing the green transition, particularly in terms of decarbonization, and promoting digital transformation. Sustainability is also at the core of the EU’s Connecting Europe Facility’s dedicated programme for alternative fuel (the *AFIF – Alternative Fuel Infrastructure Facility*), aimed at to co-fund investments in the infrastructure for the supply of alternative fuels, including EV chargers, which for the programming period 2021-2027 envisages a budget of some EUR 1.9 billion in total for the General Envelope (all EU Member States) and the Cohesion Envelope (Bulgaria, Croatia, Cyprus, Czechia, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, Slovenia).

3.3 Development guidelines

Taking into account the above-mentioned objectives and the status of EUSAIR road transport system, the following development guidelines are recommended, grouped into three main policy areas, as for the other transport modes.

SAFETY, SECURITY AND RESILIENCE	ENVIRONMENTAL AND SOCIAL SUSTAINABILITY	CONNECTIVITY AND TRAFFIC DEVELOPMENT
<ul style="list-style-type: none"> • Harmonise road network safety standards of non-EU countries to the EU (Road Safety Action Plan is in place in Western Balkan countries) • Increase the resilience of road infrastructure to extreme weather events • Exploit digital solutions for improving safety of driving conditions • Increase the availability of safe and secure parking areas • Implement EU Acquis in the field of dangerous goods transport 	<ul style="list-style-type: none"> • Support the renewal of road vehicles to boost the uptake of low carbon road vehicles • Support the diffusion of EV charging infrastructure (harmonise regulations and policies/measures with EU countries) 	<ul style="list-style-type: none"> • Harmonise the quality of roads in cross border sections • Define specific Multimodal Transport Plans in Western Balkan countries to support its diffusion • Harmonise the adoption frameworks for ITS solutions • Commonly address the problem of cumbersome paper-based cross-border procedures in Western Balkan countries

Further indications on the **development of the road network infrastructure-wise** have emerged from the application of the EMTM (European Multimodal Transport Model) within the present Masterplan, wherein the Baseline scenario projects (those which are already ongoing or in an advanced state of planning) particularly improve the core network corridor sections, although lower accessibility indexes remain in the Western Balkans, especially along the Adriatic coast; the further planned projects not included in the Baseline 2040 scenario are relevant to further improve the road network. Albeit relevant to modernise the network, improvements may not always imply the development of expressways/motorways solutions; further to the Baseline and planned projects, a limited number of additional projects has been identified to complete the core and extended core networks and their modernisation, with a focus on areas presenting low accessibility indexes, as presented in the following table.

Table 97: Additional projects completing the Masterplan scenario – Road network

TYPE OF INTERVENTION	COUNTRY	PROJECT	
New construction	Bosnia and Herzegovina	Road Sarajevo - Ploce (Bradina - Potoci section)	Motorway
New construction	Montenegro	Road Podgorica - Sarajevo (Danilovgrad - Pluzine section)	Expressway
Upgrade	Italy	Adriatic Ionian Corridor: Trieste - Basovizza - border IT/SI section	Expressway
Upgrade	Slovenia	Adriatic Ionian Corridor: border IT/SI section - Kozina - border SI/HR	Expressway
Upgrade	Croatia	Adriatic Ionian Corridor: border SI/HR - Rupa A7 Motorway	Motorway
Upgrade	Bosnia and Herzegovina	Adriatic Ionian Corridor: Capljina - Trebinje - border BA/ME	Motorway
Upgrade	Montenegro	Adriatic Ionian Corridor: border BA/ME - Niksic	Motorway
Upgrade	Albania	Adriatic Ionian Corridor: border AL/EL	Motorway

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