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Overall Objective	To improve the **economic efficiency**, **safety** and **accessibility** of transportation whilst managing the **environmental impact** of existing and future transport activity and ensuring **integration** with other sector policies.		
Purpose	To develop actions that address weaknesses in the transport sector at a Regional and National Level. The actions shall cover the period from 2018 until 2030, and shall acknowledge the pipeline of projects and policies that have already been agreed and which it is intended will be delivered during the period of the Strategy.		
Expected Results	• Scoping Report; • Digital Databank; • Transport Model, Transport Modelling Report and Transport Model Manual; • Problem Analysis Report; and • Draft National Strategy for the Transport Sector. • SEA report		
Key Activities	1 Inception 2 Scoping 3 Data collection 4 Stakeholder consultation 5 Transport model 6 Problem analysis and objectives 7 Development of measures 8 Preparation of the strategy 9 SEA Procedure and consultation		
Key Stakeholders	MoTC		

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Abbreviations & Acronyms

AADT	Annual Average Daily Traffic
CA	Contracting Authority
CFCD	Central Financing and Contracting Department within Ministry of Finance
MoTC	Ministry of Transport and Communications
EUD	Delegation of the European Union
EC	European Commission
EU	European Union
IPA	Instrument for Pre-accession Assistance
ICAO	International Civil Aviation Organization
OPRD	Multi-Annual Operational Programme “Regional Development”
EBRD	European Bank for Reconstruction and Development
EIB	European Invest Bank
WB	World Bank
IFI	International Financial Institution
CBA	Cost Benefit Analysis
MoEPP	Ministry of Environment and Physical Planning
SEETO	South-east european transport opservatory
TeTC	Treaty for establishing transport community
NGO	Non-Government Organisation
PCU	Passenger Car Units
SEA	Strategic Environment Analysis

FWC	Framework Contractor
PSC	Project Steering Committee
PRAG	Practical Guide to Contract procedures for EU external actions
ToR	Terms of Reference
NTS	National Transport Strategy
CWR	Continuous Welded Rails
UIC	Union Internationale des Chemins de Fer (International Union of Railways)
TSI	Technical Standards for Interoperability
HTV	Heavy Truck Vehicles
SSO	Statistical State Office
ITS	Intelligent Transport System
NPAA	National Program for adoption of the *Acquis*
PESR	Public Enterprise for State Roads
PERI-M	Public Enterprise Railway Infrastructure-Macedonia
HTV	Heavy Truck Vehicles
SO	Specific Objectives
GO	General Objectives
MI	Measure Infrastructure
RM	Regulatory measure
OSM	Operation and service measure
NTS	National Transport Strategy

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1. PART 1: Introduction

1.1. Guiding Principles

1.1.1. Goal of the National Transport Strategy

The Government of the Republic of Macedonia is committed to transpose EU Guidelines and Directives/Regulations (the EU acquis) with the aim of integrating within the European Union and becoming a full member of the European Union.

The National Transport Strategy (NTS) demonstrates this ambition through the development of a sustainable transport sector that is harmonized with other strategic developments of the country; that disposes of an intermodal infrastructure fully integrated into the European TEN-T network; that is governed according to the principles of good governance respecting the universal right of "mobility" for all; and that is properly regulated in accordance with EU rules and regulations while incorporating international best practices for its further development.

Guided by the fundamental principle that transport is a service rather than an economic good, the NTS takes into account overall objectives for the economic and social development of the country, for considering the needs of future generations, and for preserving the environment. The National Transport Strategy therefore proposes activities and policy measures on a medium and long-term period to efficiently and effectively address the key challenge to improve the quality of transport infrastructures and operations.

Capitalizing on past experiences, the NTS takes into account new requirements such as those related to safety and security, the environment, and the country's international commitments in view of becoming a Member State of the European Union, assuming fully its role in:

- Policy development and planning;
- Market regulatory functions;
- Promotion of a framework allowing the exercise of healthy competition between the various stakeholders, and finally;
- Correction of market mechanisms to ensure an optimal level of service delivery.

This National Transport Strategy (NTS) is a continuation of the previous NTS adopted in 2007 by the Government of the Republic of Macedonia, but now also includes air traffic. Based upon the EU White Paper on Transport, the revised NTS takes into account the EU transport policy relative to the Core and Comprehensive transport network as well as the transport policy outlined by South-East Europe Transport Observatory (SEETO) continued by the Treaty for establishing the transport community. The long-term orientations of the National Transport Strategy thus consolidate the results already obtained and will give impetus to the process of modernization of the transport system, under way for several years.

The present National Transport Strategy is founded on a detailed problem analysis using an actualized transport model to assess different scenarios for future transport demand, which will permit the assessment of the best solutions and define the Government's transport objectives for achieving a high level of sustainability and efficiency in the national transport sector. The list of general objectives of the NTS is produced according to the EU and MK guideline policies and strategic documents. A second

list of specific objectives is composed according to the analysis of specific needs of the transport system in the country and is considered a crucial stage of development of Transport Strategy procedure. The specific objectives are subsequently detailed per transport mode.

Our vision

Our vision is:

- That the transport system is a modern, well-maintained, integrated and interoperable network, fully adapted to the needs of the country, to the mobility expectations of its citizens and users, and in support to the sustainable development and growth of the national economy as well as to the regional and international trade exchange.
- That transport is safe, reliable, affordable, and accessible to all, ensuring the mobility of the citizens and business, especially the young, older and people with disabilities and reduced mobility (PMR).
- That the transport system is robust, resilient to all emergency events and situations despite of the fact they are caused by act of terrorism, natural disasters or man-made catastrophes, prone to be fully recovered and operational in short time period after the emergency event.
- That the transport system considers the wellbeing of future generations regarding financial burdens, respect for the environment, and cultural heritage of the country.

By the year 2030 …

... Macedonia's national transport system will consist of integrated and interoperable road, rail, air, and lake/port and urban transport, efficiently governed by a sustainable transport policy. The infrastructural links between various modes of transport are going to be developed and the national transport networks will fully interconnect with the urban transport systems using Intelligent Transport System (ITS) technologies to provide intermodal systems that facilitate and optimize the transfer/shift between modes. The national and urban networks will be planned, developed, managed, operated and maintained according to international standards and best practices and in accordance with national rules and regulations that fully aligned with EU guidelines and directives.

Ensuring transport services for people and goods that are safe, sustainable, and competitive in terms of frequency, price and quality of services, the transport sector will thus play its full role as a catalyst for the country's socio-economic development and as provider to the nation's economy of international competitive advantages.

The Macedonian transport network will be fully integrated in the European TEN-T:

- Roads will be totally adapted to the traffic and properly maintained. The road sector will be governed by the rules of competition, under the control of a modern administration and transparent regulations. Operators and service providers will be well trained professionals, using equipment in good condition to provide a high level of service. Urban public transport will be well organized, efficiently connected with long distance transport, and the transfer between various systems will be possible without difficulties or interruptions, thus minimizing urban congestion.

- Rail transport will be of high quality in terms of frequency, time, comfort, reliability, safety and security. The infrastructure management and the operating services offered by solvent and

efficient operators will guarantee quality public services delivery throughout the network and quality transport of freight in accordance with economic needs in terms of time, costs and quality of transport services.

- Air transport will adhere to European's Open Sky and provide a service corresponding to the development expected for the country, therewith becoming a tool for social and economic mobility and catalyst of the national economy and citizens' wellbeing. Air transport will be a facilitator of European integration and provide access to international markets in a competitive and safe and secure manner. The air traffic will develop according the TEN-T network and legislation and activities initiated under the SES network. Good coordination between the aviation authorities will ensure the functionality of the institutions according to European and international standards and conditions.

- Macedonian lake ports will be efficient links and fully integrated in the transport network of the country. The operators will have modern vessels and well-trained crews.

- Urban transport will offer efficient and integrated public transport services that are environment-friendly and use advanced IT systems such as single ticketing, on-line information, and traffic-based route planning to be fully intermodal and interconnected.

Our Mission

Mobility for all

"Mobility" is a universal right[1] and, as such, it is a political instrument that has become indispensable for creating an affordable, accessible, integrated, and "green" transportation system.

The social responsibility of the Government is to provide mobility at two levels; at the *financial level* by the obligation for public services to set up affordable rates for all, including the least favoured, and at the *physical level* with guaranteed accessibility to infrastructure and vehicles for all users including people with disabilities and reduced mobility (PMR), and the development of multimodal transport for goods and persons via the promotion and facilitation of services and the development of infrastructures contributing to the interconnectivity of networks.

In the development of mobility for all, the environment and its protection represent an important stake, in particular via "green" initiatives, such as the development of public transport on dedicated lanes and the promotion of non-polluting vehicles (hybrid, electric, LPG etc.).

The mission of the Ministry of Transport and Communications (MoTC) is to endeavour for "*the development and management of efficient and reliable transport systems, through a coherent and sustainable transport policy, thus supporting the economic and social development of the nation.*" The MoTC shall therefore:

[1] United Nations' "Convention on the Rights of Persons with Disabilities and its Optional Protocol" (A/RES/61/106) was adopted on 13 December 2006; the convention is part of the founding principle of European Union legislation, consolidated and complemented in the EU by: the 1999 Treaty of Amsterdam (Article 13); the EU Charter of Fundamental Rights 2007 (Article 21 and Article 26); The 2009 Treaty on the Functioning of the EU (Articles 10 and 19); and the Communication "European Disability Strategy 2010-2020: A renewed commitment to a Europe without barriers".

- Fulfil the mandate as a public administration with excellence in accordance with the regulations in place;
- Apply servant leadership towards the citizens in accordance with the principles of Good Governance;
- Strengthen the necessary institutions to provide effective transport for passengers and freight;
- Provide and maintain the necessary transport infrastructure and operations;
- Enable high quality transport services to the public guaranteeing high levels of safety.

In pursuing its mission, the Ministry of Transport and Communications will apply the principles of good governance, federated around three principles:

1) *Professionalism*: by exercising its duties in all fairness, within the framework defined by the laws and regulations while seeking a constant improvement of the service rendered.
2) *Transparency and accountability*: by being as open as possible to all decisions and actions taken, and in a responsible manner.
3) *Creativity and Innovation*: providing a work environment that stimulates creativity and innovation in the sector.

Our Values

Good governance

As a future Member State of the European Union, the transport sector will be managed according to the key principles of Good Governance:[2]

1. **Participation**: All citizens should have a voice via a participation in the decision-making process, built on freedom of association and speech as well as on the capacity to participate constructively.
2. **Rule of law**: Legal frameworks should be fair and enforced impartially.
3. **Transparency**: Transparency is built on the free flow of information and on processes, institutions and information which are (directly) accessible and with enough information to understand and monitor them.
4. **Responsiveness**: Institutions and processes must serve all citizens and stakeholders without favouritism.
5. **Consensus oriented**: Decision-making is based on mediates differing interests to reach a broad consensus on what is in the best interests of all.
6. **Equity**: All citizens must have the same opportunities to improve their wellbeing.
7. **Effectiveness and efficiency**: Processes and institutions produce results that meet needs while making the best use of available resources.
8. **Accountability**: Decision-makers in government, the private sector and civil society organisations are accountable to the public, as well as to institutional stakeholders. This accountability differs depending on the organisations and whether the decision is internal or external to an organisation.
9. **Strategic vision**: Leaders and the public have a broad and long-term perspective along with a sense of what is needed for such development. There is also an understanding of the historical, cultural and social complexities in which that perspective is grounded.

[2] "Governance for Sustainable Human Development", United Nations Development Programme (UNDP), 1997

In order to achieve sustainable mobility for all, the structural framework of efficient sector management requires:

- **Sufficient resources:** Governments need to ensure that the responsible institutions: (1) dispose of the necessary annual budgets for executing the Government's transport policy, (2) have an efficient IT system to communicate and exchange information and collect, store and manipulate accurate, verified and actualized sector information, and (3) are allocated sufficient, efficient and well-trained staff to ensure the efficient management of the sector.
- **A functional structure: t**he public Administration responsible for the transport sector needs to have a clearly outlined transport policy that is implemented by a flexible organization that efficiently functions in line with sector needs.
- **An efficient method:** The principles of good governance have to be systematically applied and the principal regulatory and control responsibilities of the government fully adhered.

The National Transport Strategy (NTS) apply in full the above mission and vision and therewith establish an efficient and coherent framework for all decision-makers to ensure the sustainable development of the transport sector.

1.1.2. Objectives

Based on a comprehensive analysis of the Transport sector in the Republic of Macedonia, the following objectives are formulated:

Overall objectives

The overall objective of the National Transport Strategy is **to develop a harmonised 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 full implementation of the National Transport Strategy will:

- Promote economic growth by building, enhancing, managing and maintaining an integrated and interconnected transport network and by offering efficient transport services;
- Facilitate the use of transport systems using intelligent transport systems (ITS) and mobile applications for on-line travel information, journey planning, and ticketing.
- Improve the safety of pedestrians, cyclists, drivers, passengers and staff.
- Promote social inclusion and cohesion by connecting remote and disadvantaged communities, guaranteeing accessibility for all to the transport networks and services; and
- Protect the environment and improve health by building a "green" transport system that minimizes emissions and limits the consumption of resources and energy.

General objectives

N.	General Objectives	Targets
GO1	**Strengthen EU integration and promote regional cooperation** *International dimension of all transport modes*	**Completion of SEETO Core and Comprehensive *Road and Rail* Network passing through the national territory (defined as *TEN-T Comprehensive Network in the South East Europe - SEETO/TeTC*)**

GO2	**Contribute to the improvement of the economic sustainability at the national level** *National dimension of all transport modes & urban transport*	**Improvement of country ranking in World Bank Logistics performance index**
GO3	**To introduce green mobility and logistic focused to environmental performance of the Transport sector** *all transport modes & urban transport*	**Reduce the greenhouse emissions from transport by 15.1% in 2025 and by 18.6% in 2030 compared to the levels in the respective years under the Do Nothing scenario.**
GO4	**Establishment of reliable and safe transport system** *all transport modes & urban transport*	**Reduce of the death toll on the roads by 50% until 2030**

Specific objectives

After a comprehensive analysis of the state of the play, the first and second General Objectives are defined based on understanding that the efficient sector management is structured in 3 key functions that reflect the responsibilities of modern Governments in guaranteeing mobility for all:

1. The *regulatory function*: ensuring a legal and regulatory framework that is aligned at the international, regional, and national level and for which a regulatory authority ensures its full application.

2. The *Infrastructure function*: developing an integrated and multimodal infrastructure that is efficiently maintained and corresponds to the sector's present and future capacity needs.

3. The *Operations and Services function*: ensure the provision of services and operations that correspond to the principles of sustainable mobility for all.

Further, considering that the objectives related to environmental, economic performance and safety improvement in the Transport sector are crosscutting by nature, the measures and respectively actions foreseen under the third and fourth General objectives imply systematic translation of a broad field of goals into a set of mutually reinforcing packages of measures.

N.	Specific Objective
GO1	**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** (road and rail); *Infrastructure function (IF)*
	1.2. To reduce border crossing times and procedures (all modes) *Operations and Services function (O&S)*
	1.3. To finalise the alignment of the Macedonian transport legislation to the EU acquis (all modes) *Regulatory function (RF)*
GO2	**2.1. To improve the accessibility and quality of the national transport infrastructure and transport services** (all modes) *Infrastructure function (IF)*
	2.2. To ensure the socio-economic and financial feasibility of transport development projects & initiatives (all modes); *Operations and Services function (O&S)*
	2.3. To improve the administrative and operational capacity of governance structures (all modes) *Operations and Services function (O&S)*
GO3	**3.1. To develop and improve environmentally friendly and low carbon transport systems** (all modes) *Crosscutting*
	3.2. **To stimulate modal shift** (all modes) *Crosscutting*
	3.3. To increase the importance of intermodal and multimodal transport in national transport policy *Crosscutting*

N.	Specific Objective
GO4	4.1. **To improve transportation safety** (all modes, except roads) *Crosscutting*
	4.2. **To improve road traffic and road infrastructure safety (incl. Urban transport safety)** *Crosscutting*
	4.3. **To introduce IT technologies and Implementing Intelligent Transport Systems (ITS) in the transport sector** (all modes) *Crosscutting*

1.2. Development of the Transport Sector – State of play

1.2.1. Characteristics of the Transport Sector

The existing transport infrastructure, as of the year 2017[3], covers 14.410 km public roads, 699 km railway lines open track with a standard gauge of 1.435 mm, and 2 international airports. EC progress report for the Republic of Macedonia of 17. April 2018, as regards the country's ability to assume the obligations of membership, states that the country is moderately prepared in most areas, including in the areas of competition, **transport** and energy.

1.2.2. Development of the Transport Sector

The national priorities concerning the development of transport sector are prescribed in the following strategic documents:

- National Transport Strategy 2007-2017;
- Public Investment programmes;
- Five years' development and maintenance programme of the PESR;
- Three years National Programme for Railway Infrastructure;
- National strategy for development of air transport in Republic of Macedonia (2013-2018)
- Multi-annual Plan of SEETO/Treaty for establishing transport community;
- Programme of the Government.
- National program for the adoption of the Acquis
- Economic Reform Programme

The previous National Transport Strategy (NTS), determining the national transport development priorities for the period 2007-2017, was adopted by the Government in July 2007 and it was updated every two years. The review of the previous National Transport Strategy (NTS) and the therewith related commitments are summarized hereafter.

Road network

- The main road projects along the Comprehensive/ Core Road Network along the country can be found in SEETO Comprehensive Network Development Plan – Multi Annual Plan[4] Annex 1.1 (table 1).

The development and operationalization of a road Traffic Management System was also planned to be achieved in 2015, but the installation of the system is delayed. Finally, cross-border connectivity and

[3] State Statistical Office of the Republic of Macedonia – MakStat Database

[4] SEETO Comprehensive Network Development Plan – Multi Annual Plan **(**http://www.seetoint.org/library/multi-annual-plans/)

improvement of the time border crossing of passengers and freights is specified as objective but not quantified.

Rail network

The railways projects along the Comprehensive/ Core Road Network along the country can be found in SEETO Comprehensive Network Development Plan – Multi Annual Plan[4] Annex 1.2.

The preparation of project studies and design documentations, construction of new and reconstruction of existing railway lines are the principal projects activities in the infrastructure railway company PE MR-Infrastructure in the past period. The investments have been made for the following principal railway infrastructure projects:

- Partially rehabilitation of the railway line along the Corridor X (about 31 km).
- Civil works to build a new railway line of Corridor VIII, the Eastern part between station Kumanovo and station Beljakovce (about 31 km).
- Civil works of the railway line along the branch X-d of Corridor X between station Bitola and border station Kremenica with a length of 16 km (border with Greece).
- Rehabilitation of 10 existing railway stations on Corridor X and X-d
- Rehabilitation of the main passenger railway station in Skopje
- Improving the control and operation train system
- Preparation of Feasibility Studies, EIAS, CBA and Detailed Design for construction of missing railway line along the whole Corridor VIII.
- Preparation of Feasibility Studies, EIAS, CBA for reconstruction of railway line along the Corridor X and X-d.

The MoTC foresees finishing the construction of railway line of Corridor VIII Eastern section Kumanovo-border with Bulgaria until 2025. Actually, the construction works are on-going of the first section of Eastern part of the railway line from Kumanovo to Beljakovce. The Detailed Designs are approved for the sections from Beljakovce to Kriva Palanka and from Kriva Palanka to border with Bulgaria, as well as for the railway line on Western section of Corridor VIII from Kichevo to border with Albania.

The Border Crossing Agreement with Serbia in rail transport is signed and its full implementation in order to improve border connectivity is foreseen for the coming period.

Air transport

The strategic development of air transport in the country is identified in the National strategy for Development of Air Transport in Republic of Macedonia (2013-2018).

The general objectives of the National strategy for Development of Air Transport are aligned with the ICAO (International Civil Aviation Organization) strategic goals. To fully align the existing legal framework with the ICAO strategic goals and ensure their implementation, the strategy for the Aviation Sector foresees:

- Connectivity – Air transport connectivity includes some projects as:
    - Increasing of the capacity of the two airports is planned in short terms. This activity is completed with construction of new airport building in Skopje, and reconstruction of existing airport building in Ohrid.
    - Adopting the law of 3, 4 and 5th freedom is for short term and implemented through the bilateral agreements and the Agreement for common aviation area.
    - Promoting of the two airports for attracting low-cost air carriers. This activity is ongoing through the support from MoTC to the WizzAir Hungary Ltd during the period of three years from 2015 to 2018.

- Promotion of connections with the main hubs in Europe is ongoing activity supported by the Government in collaboration with airport concessioner TAV. The financial support is done for airline companies departing from the airports in the country (based on the EU guidelines).
- Supporting the establishing the transport hub at the airport "Skopje" and public transport system (buses) for connection of airports with the bigger cities. This project is planned on long term for 8 years. The project is ongoing and the buses from Skopje to airport in Skopje are established.
- Promotion of usage of helicopters from the airports to the hospitals is planned activity and not yet completed.
- Improve turnover of passenger and freight lead times and efficiency with border management on border crossing connectivity. This project is completed.
- Standardize customs and immigration procedures, implement international conventions and standards. This activity is ongoing and planned for 4 years.
- Improve control security measures is completed.

- Accessibility and mobility – Air transport accessibility
  - Efficient & Affordable Public Transport System (buses and rails) to and from the airports. This project is done, or the buses are established to connect the airport in Skopje with the town Skopje.
  - Accessible facilities and services take account to adapt ground handling procedures and equipment for passengers with reduced mobility. This activity is completed according the Regulation on airport ground handling services for aircraft, passengers, baggage, freight services.
  - Adaptation of the airport to permit the seamless handling of passengers with reduced mobility is completed.
  - Action plan for aged and disabled peoples concerning the air transport consists to provide free access to health services in the airports. This activity is completed in accordance with international standards.
  - Upgrading the car parking facilities for passengers is completed, according to the concession agreement the parking is constructed for 1300 vehicles.
- Environmental sustainability – Air transport
  - Concerning the protection of natural resources, the development of the Master Environmental Plan, noise monitoring, waste management program and water treatment program are planned in short term for 2 to 4 years.
- Inter and Multi-modality – Air transport
  - The inter-modality of the freight transportation includes standardization, harmonization and promotion with the European Intermodal Landing Unit. These activities are planned on short term of 4 years. The multi-modality in passenger transportation incorporates the promotion of access to the multi-modal nodes – information regarding the routes, integration of ticketing and luggage services. The first activity is envisaged to be done on middle term of 7 years, and the second on short term of 4 years. The both activities are not completed and they are under analysis.
  - Investment in the Transport Network – Air Transport
  - The action plan consists of enforcement of the revenue control from airport users. This activity is not completed.

- Modernization of the car parks of passengers, groups and personnel is an activity planned on short term for 4 years and it is completed.
- Improvement of the access to the airports is completed with construction of a new interchange with a motorway.
- Adaptation of the airport towards the people with disability is completed according to the National Program for Aviation Facilitation.
- Defining the stances of the Republic of Macedonia in the negotiations for SEE-FABA (Initiative for the formation of functional blocks of air traffic in Southeast Europe) or any other FAB (DANUBE FAB – DANUB Functional Airspace Block) is planned for short term.
- Development of the Master Environmental Plan for air transport is planned for short term of 2 years.
- Concession of the two airports in Skopje and in Ohrid and construction of new cargo airport in Shtip. The concession agreement is signed in 2008 between the MoTC and TAV Ltd Skopje. The signed agreement is for concession period of 20 years. According to the concession agreement the TAV has modernized the airports in Skopje and in Ohrid, and it is needed to build a cargo airport in Shtip which is planned to begin in May 2020 and to be completed in May 2023.

- Specific goals in Republic of Macedonia – Air Transport
  - Restructuring the existing public entities is completed in the legal acts, by establishment of the ANSP (Air Navigation Service Provider) and restructuring of PEAS (Public Enterprise for Airport Services – Makedonija Skopje) in JSC owned by the State.

Inland waterways transport

Passenger transport exists only on Ohrid Lake on temporary basis with smaller ships from 25 to 150 seats. There are two types of passenger transport on the Ohrid Lake: line and out-of line transport by agreement between the gondolier and the users of transport. Line transport is carried out on a certain route and by previously set schedule of sailing, and non-line transport is often used for groups of passengers who have the same final destination. International lake line between Macedonia and Albania is established but of temporary/seasonal nature.

The so-far experience with the previously established passenger line from Ohrid to Pogradec, R. Albania, this type of transport infrastructure will not be feasible on Ohrid lake where almost all of the inland waterways navigation in the country is made because of low/no interest.

With proper infrastructure, management and safety of the all participant in the inland waterways including environmental issues, its development could contribute to meeting the objectives of building a sustainable transport system in the region. The objectives defined with NTS 2007-2017 for reconstruction/building proper marina facilities remain still valid.

Urban transport

Considering that the Capital Skopje is populated with around 40 % of the urban population, the Ministry of transport and communications undertook measures in order to improve the urban transport conditions and services with procuring of new buses, in accordance with the European emissions legislation and in line with the Urban transport objectives in NTS 2007-2017. In 2012, the project was completed for supply of 313 new buses, providing to the citizens, comfortable, modern and safe public transportation. The investment was in total of EUR 50 million financed from the national budget. Additionally, City of Skopje implemented activities for improving conditions of city

bus stops with replacing the old and ruined constructions with modern 226 new bus stops in a total value of EUR 1.07 million from the own budgetary resources.
There are measures implemented in relation to the parking organization nearby key points of the mass public transport as construction of new parking garages by private investors, providing new 1384 parking places, and by the national funds, providing new 1686 parking places in the central area.
The municipalities with own budget resources are undertaking continuous activities for construction, reconstruction and rehabilitation of pedestrian lanes, alleys and sidewalks, bicycle lanes, including related activities such as installation of signs, markings as a part of the integrated urban transport system. However, the Ministry of transport and communication, in the past period with own budgetary resources supported urban infrastructure development and constructed 78km of pedestrian lanes and 2km bicycle lane with total value of EUR 1.4 million in the Municipality of Dojran, Veles and Krusevo.
The challenge for proper urban transport planning, development and management, particularly in the capital city remains. It is of great importance as well to continue with pursuing the goal for greener urban transport in the bigger cities in the country. Urban mobility should foster and enable cities to flourish, without creating over-dependence on any particular mode of travel.

Transport safety

Regarding the road safety, the National Council for Road Traffic Safety has issued the First and Second National Strategy for Road Safety for five years' period (2015-2020). However, more detailed data should be made available for the analysis of road accidents.

The PE Makedonija Pat drafts yearly programs for winter and regular road maintenance works, as well as for investment maintenance aligned with budgetary allocations for protection and maintenance of road network, in line with the five-year program for development and maintenance of the public roads adopted by the Government. Aligning the road safety and signalisation standards with the EU is ongoing.

The adoption of EU Strategic Action Plan for Road Safety[5] on 17 May 2018, outlining the main measures to be taken in a short term, as well as an outline of actions planned for the 2021-2030 period, represents a good basis for implementing measures which shall contribute to improving the road safety in the country. The EU Strategic Action Plan was published as part of the third mobility package, which also includes new vehicle safety standards, updated rules on road infrastructure safety management and a strategy for automated driving.

Strengthening the administrative capacity, improving the technical support for the road inspectors and attending of regular trainings for inspection and control by the inspectors, should be further supported.

The rail infrastructure safety includes implementation or improvement of signalling equipment on the collision spots and improvement of security of level crossings. The project is ongoing wherever there is a need, additionally, in line with new implemented projects. The rail vehicles safety and transport of hazardous materials are implemented in the legislation.

[5] https://eur-lex.europa.eu/resource.html?uri=cellar%3A0e8b694e-59b5-11e8-ab41-01aa75ed71a1.0003.02/DOC_2&format=PDF

Development of the transport sector through accessibility, environmental sustainability, intermodality, financing and specific goals for policy measures

The improvement of accessibility and mobility of the citizens is a big challenge for each public policy and choice of appropriate measures. The reduction of disparities regarding accessibility to public transport between different social groups in the society is partially realised. The accessibility to road infrastructure is planned but there are not special measures for realisation of this objective. The accessibility of the people with reduced mobility remains a challenge. Promotion of public transport and changes in the modal split favourable for public transport is not measured and quantified. The financial support for certain social groups as pensioners and students is realised through special tariffs or special free transport on designated days. The reduction of needs for usage of private cars and promoting the non –motorised modes and public transport is partially realised.

The environmental sustainability and protection is achieved in cooperation with the relevant Ministries in the country. In the rail sector, the usage of Electric Multiple Unit (EMU) is completed by purchasing of 2 passenger units with EBRD loan for reduction of emissions of harmful gases. Additionally, 4 passenger diesel units with EBRD loan are procured in order to replace the old and outdated ones. The policy measures concerning environmental issues should be appropriated regarding the needs and problems of population in bigger cities in the country.

The inter and multi–modality is in the early phase of development. Promotion of multi-modal services by door-to-door are planned on middle term of 7 years and this activity is not yet done, it is under analysis. However, important steps are already done. The study for strategic multimodal nodes is carried out in 2014 according to the best international practices. Next a Feasibility Study for multimodal freight node in region of Skopje is planned along with a tender procedure for preparation of project documentation for multimodal node in Trubarevo, which will be in the frames of the EU funds-IPA2 program. Promotion of changes of individual behaviour and introducing policy for shifting the freight and passengers from roads to more environmentally friendly transport modes. This activity is under analysis.

The policy in financing & investments in the transport network encompasses some measures such as restructuring the former Road Fund in to the Agency for State Roads, recently transformed in Public Enterprise for State Roads and improving the road toll payment system. In accordance with the Law, there is allocation of public income for Public Service Obligation (PSO) in rail passenger transport in the budget of MoTC for compensation of losses and the MoTC and JSC MR-Transport have a three years contract for its execution. The bigger part of financing of projects comes from IFIs as a World Bank, EBRD, EIB, EU-IPA and from China Exim Bank.

The specific goals for policy measures in the NTS 2007-2017 oriented to the restructuring of road public entity into PE for state roads and the maintenance company PE Makedonija pat is completed and the division of Railway Company into two independent companies for Infrastructure and Transport are in place. In near future the restructuring of the maintenance company PE Makedonija pat is foreseen.

1.3 Legal Context of transport development

1.3.1. Regulatory framework

The enforcement of laws and regulations is organized at two levels, notably the policy level and the executive level. The former is the combination of laws and regulations (the governing body) that guarantee the transport system functions in accordance with national objectives, which are "aligned" with EU / international standards where necessary. The latter refers to the public entities (regulatory bodies) officially assigned to ensure that laws and regulations are correctly implemented and that all stakeholders fully commit to legal and regulatory framework and apply it correctly. In the Republic of Macedonia, the MoTC is the transport policy maker while regulatory authorities ensure full compliance by operators and users of the transport system.

The Government has made significant progress in aligning its legislative and regulatory framework with the EU Acquis and is committed to continue the effort for achieving full alignment of the legal and regulatory framework for the transport sector, in line with the efforts of the Government of the Republic of Macedonia to become the new Member State of the European Union.
An overview of the process of legislation alignment can be followed in the legislative annex of the National programme for adoption of the acquis and the Progress Reports of the European Commission and in near future the screening and the accession negotiation.
With key strategic documents for the transport sector and its sub-sectors being adopted, the legislation is almost fully aligned with the General Transport Acquis, but remaining shortcomings need to be addressed that improve sector planning and coordination, transport safety by strengthening the operational and administrative capacities of inspection bodies, and finally legal alignment and institutional capacity building for ITS deployment and intermodal transport.

With *road sector* legislation close to full alignment and an increasing number of bilateral international road transport agreements singed, for the purpose of strengthening the capacity for imposing its legislation, it is also necessary to:

- *First*, operationalize the legal entity responsible for conducting the conformity assessment of the existing equipment for the carriage of dangerous goods; without delay to enforce the legislation on the transport of dangerous goods;
- *Second*, increase roadside checks of commercial vehicles and improve both the legal competencies and operational capacity of road inspectors to boost the enforcement of rules and regulations;
- *Third*, adopt rules on the application of penalties for infringements of the European Agreement concerning the Work of Crews of 45 Vehicles engaged in International Road Transport (AETR).

For the *railway sector*, separating infrastructure management and operations and assigning the respective responsibilities to two independent state-owned railway companies meets a major requirement of the Acquis. The alignment process must be consolidated via:

- The separation of the accounts of the national operator's passenger and freight operations;
- The transposition and application of parts of Directive 2012/34/EU on a Single European Railway Area (ongoing);
- The finalization and signing the two cross-border railway cooperation agreements with Greece; the protocols on the cross-border railway cooperation agreement with Serbia were signed and implement more widely cross-border railway cooperation.
- The full operationalization accident investigation committee;
- The opening the market for foreign operators.

For the *civil aviation sector*, Republic of Macedonia has achieved an advanced level of alignment with the Acquis, a conclusion that has been confirmed by the ICAO “Effective Implementation” of 2016 that shows Republic of Macedonia performing equal or better than the ICAO average. On the Single European Sky (SES) legislation, the country has completed transposition and implementation of the SES I legislation and serious progress is made in the alignment of the SES II. The aviation safety legislation and the working arrangement with the European Aviation Safety Agency cover all aspects of the *Acquis* in civil aviation safety and environmental protection of products, organisations and personnel.

For *sea and inland waterway transport*, despite being landlocked, Republic of Macedonia is party to all basic transport conventions of the International Maritime Organisation (IMO) In January 2010, the Republic of Macedonia became a permanent observer country into the International Commission for Sava River Basin, and obtained authorization for participation in all open sessions of the Commission and the right to act according to the rules and conditions determined in accordance with the legal documents of the Commission, related to country observer. Alignment for the inland waterway transport sector has been achieved with all relevant EU legislation transposed and the authority responsible for inland waterways established. With the Regulation on the recognition of certification and transportation of goods and passengers approved (Official Gazette of RM, N. 31/2016), only an Acquis-compliant law on merchant shipping needs to be adopted to achieve full alignment in this sub-sector.

The establishment of a legal and regulatory framework for *intermodal transport* is still to be engaged. Following the pre-selection of a location for establishing a multimodal transport node near Skopje, legal and regulatory action is needed to evolve towards a balanced intermodal transport and mobility system.

1.3.2. Institutional Framework

The Ministry of Transport and Communications (MoTC) is in charge of creating and implementing transport policy including national strategies and action plans, inspection and enforcement. The Ministry of Transport and Communications bears the responsibilities and duties in accordance with the Law on Organization of State Administration Bodies.

The national road network is managed by the Public Enterprise for State Roads and Public Enterprise “Makedonija pat", latter in accordance with the Law on Public Roads responsible for the protection and maintenance of the national and regional road network in the country.

Railway infrastructure and transportation are managed by two state-owned enterprises: Public enterprise for railway infrastructure "Macedonian Railways" Skopje and Joint Stock Company for Transport "Macedonian Railways Transport". Agency for railway sector regulation provides transparent and impartial performance of the activities of the infrastructure manager, railway transportation and other railway services providers.

Civil Aviation Agency is responsible for the air transport functions whereas Public Enterprise for Airport Services is responsible for the management of the airports in Republic of Macedonia. The two airports in Ohrid and Skopje are under concession from the Turkish company TAV Airports for 20 years. Air Navigation Service Provider (M-NAV) manages and controls civilian air traffic in Republic of Macedonia.

The Captaincy of Ports - Ohrid, body within the Ministry of Transport and Communications is responsible body for implementation and supervising the relevant laws regarding the inland waterway transport (lake transport).

The State Transport Inspectorate and the Railway Safety Directorate are responsible for supervising the implementation of relevant laws and rules in the area of Inland Surface Transport i.e. Road and Rail Transport.

1.3.2.1. Road transport authorities

Since 1996 until 2008, the roads in the Republic of Macedonia were under the responsibility of the "Fund for National and Regional Roads of the Republic of Macedonia" in accordance with the Law on Public Roads adopted in 1996. The fund was replaced by the Agency for Public Roads, established as the legal successor of the Fund as per amendment of the Law on Public Roads of 11 July 2008. With the Law Amending the Law on Public Roads of 27 December 2012, the Public Enterprise for State Roads was established and took over the rights, responsibilities, employees, property, assets and archives of the Agency for State Roads.

The Public Enterprise for State Roads (PESR) manages the national road network and is in that context also responsible for designing and implementing the Annual Programme for planning, funding, construction, reconstruction, maintenance, and protection of the national and regional road network including: state roads management, proposing a five-year program for state roads development and maintenance, constant monitoring and control of the situation on state roads, implementing measures for rational use of funds allocated for state roads, performing investment activities in the domain of state roads, collecting fees charged for the public roads use, determined with the Law on Public Roads, automatic and manual traffic counting, cadastre of roads and bridges, information service for the state of the roads etc.

Maintenance of the national road network is under auspices of the Public Enterprise "Makedonija pat" in accordance with the Law on Public Roads: designing smaller road facilities, paving smaller sections and patching holes, design, fabrication and installation of vertical and horizontal signalization, road protection etc.

The State Transport Inspectorate (STI), is the competent body for inspection of the activities concerning transport of passengers and goods in the domestic and international road transport. The STI is independent body apart of the Ministry of Transport and Communications (MoTC). The scope of activities of the STI includes inspection supervisions in the area of: roads, road transport and traffic arrangements on public roads, cable and ski-lifts, carrying out an immediate insight into compliance with laws and other regulations and taking administrative and other measures in accordance with statutory powers.

1.3.2.2. Railway transport authorities

Due to the separation into two new entities of the "Public Enterprise Macedonian Railways C.O– Skopje" in 2007 with the promulgation of the Law on Transformation of the Public Enterprise Macedonian Railways C.O– Skopje (Official gazette 29/05), railway infrastructure and transportation are at present managed by two state-owned public enterprises:

- The Public enterprise for railway infrastructure "Macedonian Railways" Skopje (PEMRI) is the Manager of the railway infrastructure in the Republic of Macedonia and
- Joint Stock Company for Transport "Macedonian Railways Transport" JSC Skopje is the operator for national and international transport of passengers and goods.

Railway infrastructure access is governed by the Law on Railway system and managed by the PE Macedonian railways Infrastructure that approves railway infrastructure access concluding an access contract that is non-discriminatory and is in accordance with the Law on railway system.

Railway undertakings holding a license and safety certificates for rail transportation, can perform rail transport services on railway infrastructure, provided that the access contract with the infrastructure manager is concluded. The license for the performance of public railway transport is issued upon the request of a domestic or foreign legal person by the *Agency for railway sector regulation* for public transport services to any legal person who satisfies the requirements foreseen in the law on railway system. The regulatory agency for the railway sector is an independent legal entity, which establishment is based on the Law on Railway Market Regulatory Agency ("Official Journal of the Republic of Macedonia" no. 7/2008) to provide inspection and impartial performance of the activities in the railway transport, performed as public interest services. The working activities of the Agency are in accordance with the new Law on Railway System ("Official Journal of the Republic of Macedonia" no. 48/2010), since its entrance into force on 17 April 2010.

Administration for safety in railway system (safety authority) issues certificates and authorisations for all the rail stakeholders, proposes new legislation regarding the safety of the railway system and enable transparent access to primary and secondary legislation of all participants in the sector.

Committee for investigations of serious accidents as part of the General Secretariat of the Government is responsible for investigation of incidents and accidents in the rail sector.

1.3.2.3. Civil aviation authorities

The Civil Aviation Agency of the Republic of Macedonia (CAA) ensures the execution of the safety regulatory functions described in ICAO Annex 19 and Doc 9734 (Safety Oversight System), as well as the other functions related to security oversight, economic oversight, traffic rights etc.

Its mission is to regulate air transport activities of the Republic of Macedonia to ensure safe, regular, efficient, economically and ecologically sustainable national civil aviation that will be in accordance with the international standards and harmonized and integrated into the European Union. The authority has initial and continuing oversight to the aviation industry and enforces safety measures and investigates incident and accidents in aviation and to prevent future undergarment of aviation safety.
Air Navigation Service Provider (M-NAV) to which the Macedonian State delegates the management and control of civilian air traffic in Republic of Macedonia, emerged from the division of the Civil Aviation Agency into M-NAV and Regulatory Body which remain as Civil Aviation Agency. This transformation has been realised in July 2009. The organisational structure has its legal headquarters in Skopje and operating facilities throughout the national territory. M-NAV is a member of the international ATM (Air Traffic Management) system and therefore participates in research and development activities in coordination with the international control bodies for the sector.

In accordance with ICAO standards and regulations of the EU, the following commissions and committees exist:

- Commission to investigate serious accidents and incidents in aviation
- National Committee for Aviation Safety
- National Committee to facilitate transport in air traffic
- National Slot Coordinator (NSC)

1.3.2.4. Inland Waterway transport

The Port Authority is the body within the Ministry of Transport and Communications responsible for the enforcement of legal regulations and conditions within the frames of the inland waterways navigation sector. The Authority also performs the registration and control of boats and vessels via the "inspection committee for determining the sailing capacity of the vessels of the Republic of Macedonia", also established by the Ministry of Transport and Communications, that carries out the inspections and certification in accordance with the technical regulations established by the International Association of Classification Societies (IACS).

The Republic of Macedonia does not have maritime transport and consequently there is no maritime registry nor is its launching envisaged. The only water-based transport in Republic of Macedonia is the regular and special passenger transport on natural and artificial lakes in the Republic of Macedonia. The longest routes in the lake are: Struga – St. Naum with a length of 30 km, Ohrid - St. Naum with a length of 22 km and Ohrid - Struga with a length of 12 km. Other minor routes are Ohrid - Gorica, Ohrid - Metropol, Ohrid - Desaret, Ohrid-Livadishte and Ohrid - Radozda.

2. PART 2: Transport Infrastructure related Measures

2.1. Data Collection

2.1.1. Existing conditions of transport infrastructure

Characteristics of the road network

The Road Network consists of 899 km of national trunk roads, 3.778 km of regional roads and 9.733 km of local roads, as shown in Table 1 and Figure 1 below.

Table 1. Road Network in the country – yr. 2017

Type of Road	km
TOTAL ROADS' LENGHT	**14.410**
• **of which asphalt and cobbled roads**	**8.958**
Total Trunk roads (259 km highways and 640 km motorways)	***899***
• Asphalt and cobbled roads	
• Macadam	824
• Dirt and designed roads	0
	75
Total Regional roads	***3.778***
• Asphalt and cobbled roads	2.879
• Macadam	441
• Dirt and designed roads	458
Total Local roads	***9.733***
• Asphalt and cobbled roads	5.232
• Macadam	807
• Dirt and designed roads	3.694

Source: SSO, Transport and other services, 2017, MakStat

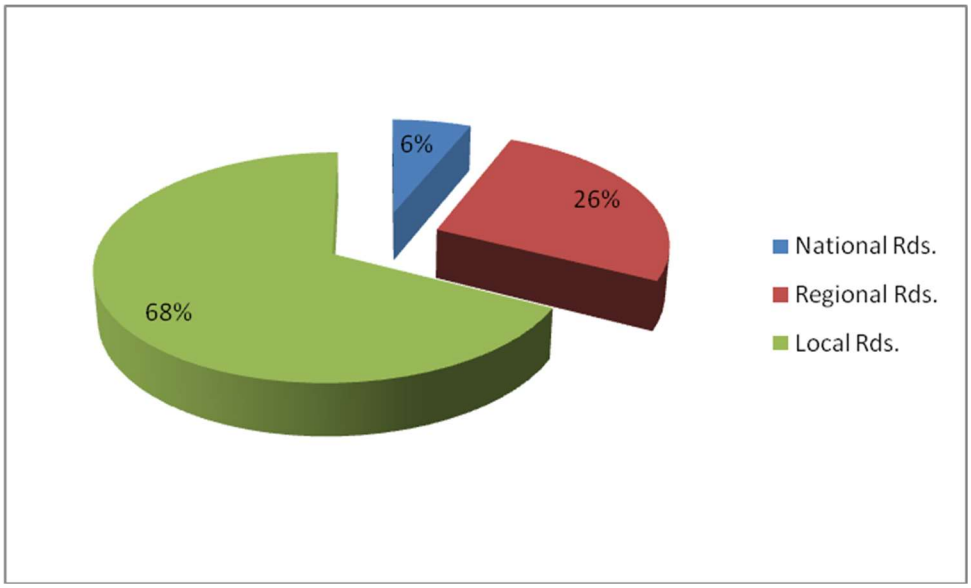


Figure 1. Share of local, regional and trunk roads in the total length of road network

According to the type of road carriageway, there are 8.958 km asphalt and cobbled roads (paved roads) or 62.2% of total public roads, 1.248 km macadam roads or 8,7% of total road network, and 4.204 km dirt and designed roads otherwise 29.2% of total categorized road network. The percentage of paved roads is similar with the average of the countries of South East Europe.

The trunk road network is formed of roads previously marked from M-1 to M-6 or according to the last designation dated of 2011 from A1 to A4. Most of these roads have two traffic lane carriageways or one for each traffic direction. The road tolling system in the country is organized as an open toll collection system consisting of 10 toll plazas at the present along the motorways. 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.

Characteristics of the rail network

The total length of the railway network consists of 699 km open line, with an additional 226 km of station and yard tracks, and also 102 km of industrial tracks. The railway open track lines are constructed as a single-track lines, and only the sections of Corridor X are electrified along 235 km or about 34% of total length of open track network. Additionally, 83 km length of station tracks is electrified. The system of electrification is AC 25kV 50 Hz. All tracks have standard gauge of 1.435 mm. The railway network mainly consists of Continuous Welded Rails (CWR). The existing main lines have classic superstructure components as rails type UIC49 or UIC54, wooden sleepers with rigid fastening system (K-system) or concrete sleepers with elastic rail fastening system. The normal sleeper spacing is 0,60 m for CWR tracks. The general characteristics of railway network are presented in the table below:

Table 2. General data of railway network in the country

Total length of railway lines-1435 mm gauge (in km)	699
Total length of station lines-1435 mm gauge (in km)	226
Total length of industrial rail tracks (in km)	102
Double-track lines	/
Electrified lines (25Kv, 50 Hz) (in km)	312.66
Number of official places (railway stations, stops, loadings)	124

Source: SSO, Transport, MakStat Database, 2017, and data from PERI MZ-Infrastructure

The railway lines of Corridor X (from Serbian border to Greek border), branch X-d (from Veles via Bitola to Greek border) and Corridor VIII (from Bulgarian border via Kumanovo, Skopje, Tetovo, Kichevo, Struga to Albanian border) is the principal railway network in the country. The railway track on Corridor X is a single railway track which starts from Tabanovce station border with Serbia continues via Kumanovo, Skopje, Veles to Gevgelija station (border with Greece) or in total there is a 312.66 km electrified track. The alignment of this line allows a maximum speed of trains between 65 and 100 km/h. The main railway line of Corridor X is composed of the following three major sections: Tabanovce – Skopje: 49 km; Skopje – Veles: 51 km and Veles – Gevgelija: 115 km. All stations of the railway line Tabanovce – Gevgelija (Corridor X) are equipped with electro-relay signalisation and safety devices. The traffic regulation is carried out by means of remote control from remote control centre performed

by the RC traffic controller. Between stations Tabanovce and Gevgelija there is automatic train control system (ATC). The projects for improving the signalling and telecommunication system with implementation of ETCS (European Train Control System) Level 1 and installation of GSM-R (Global System for Mobile Communications) are in progress.

The railway line along the branch of Corridor X, X-d starts from Veles, goes via Prilep, Bitola and connects to the railway network in Greece in station Kremenica. The length of this railway line is 146 km. The section between Bitola and border with Greece with a length of about 16 km is in phase of reconstruction.

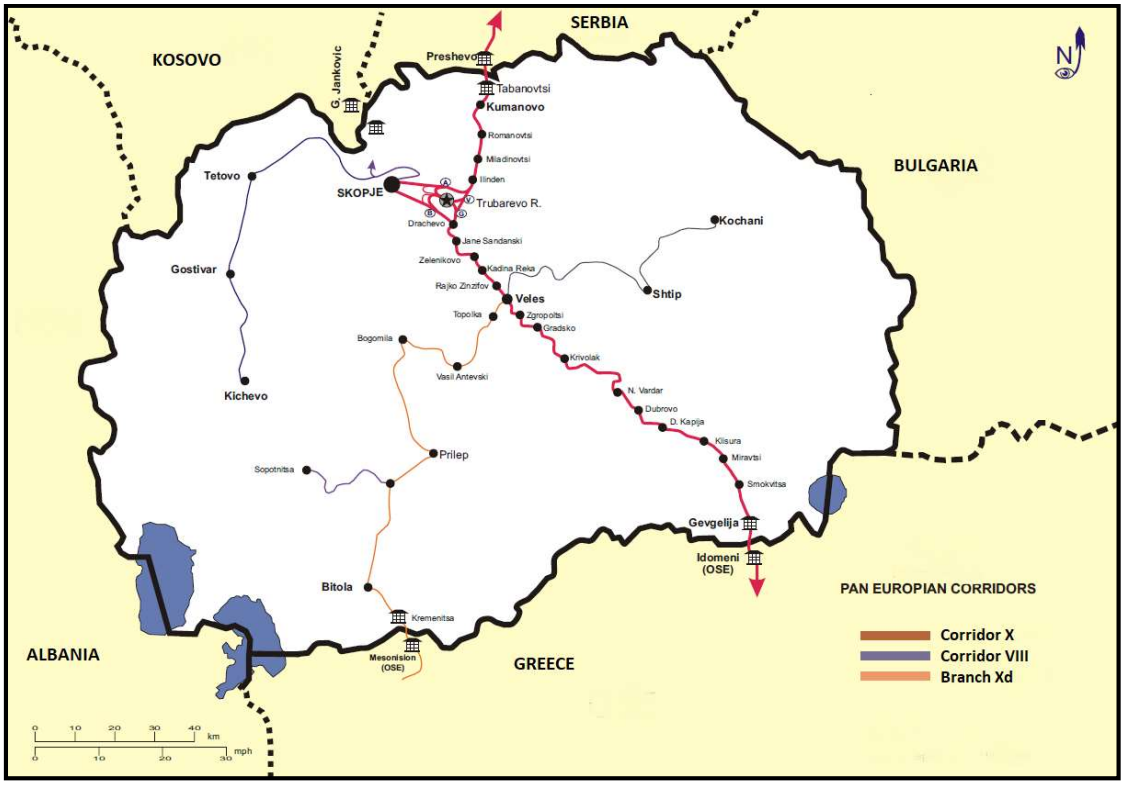


Figure 2 Railway network
Source: PE MR – Infrastructure

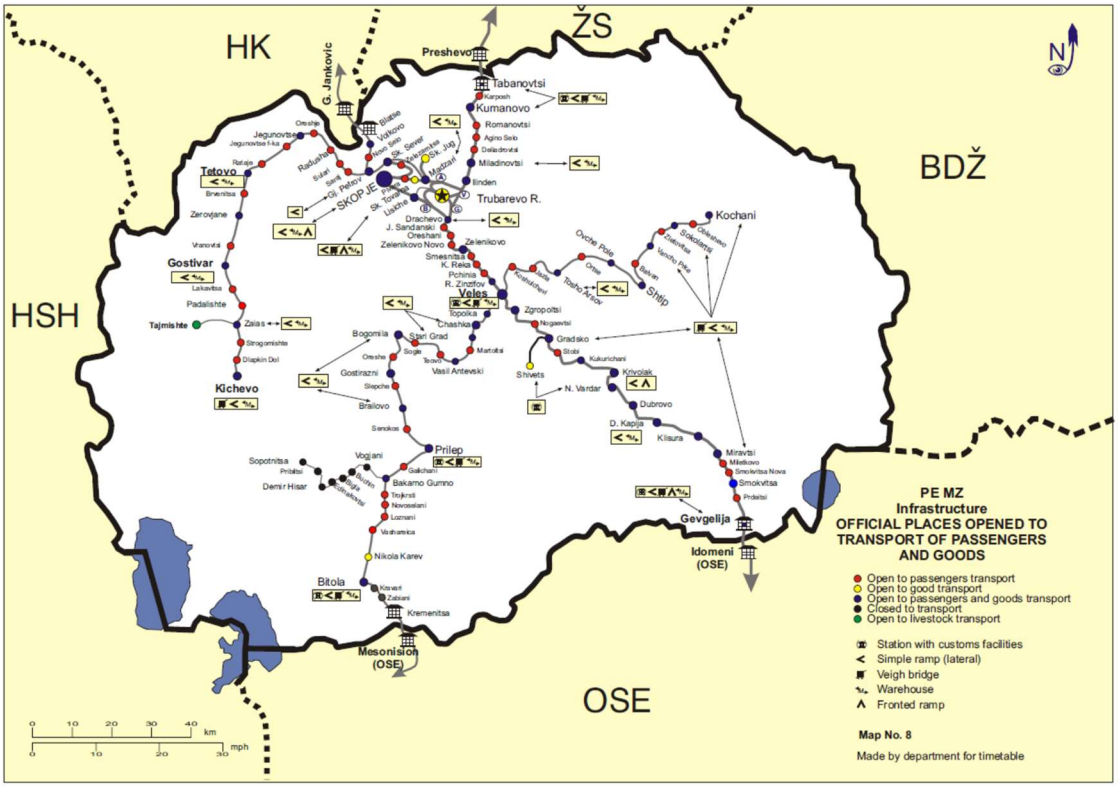


Figure 3. Official operation places for passenger and freight trains
Source: PE MR – Infrastructure

The border crossing stations are located along the Corridor X/Xd and there are 1 with Serbia (Tabanovce), 2 with Greece (Gevgelija and Kremenica, which is out of function) and 1 with Kosovo. Nevertheless, the other railway lines: Veles – Prilep - Bitola, Skopje – border with Kosovo -, Skopje – Tetovo – Gostivar - Kichevo and Veles – Shtip - Kochani are also for track renewal, and modernization of signalling, telecommunication systems, and so on the railway stations. The major parts of railway stations have been constructed for 120 axels i.e. 660 m maximum usable length of railway track which is not in accordance with a minimum useful siding length of 750 m prescribed in the AGCT (European Agreement on Important International Combined Transport Lines and Related Installations, 2003). The existing railway stations have a platform height less than 550 mm above the running surface prescribed in EU-TSI of railway system.

Corridor VIII (from Bulgarian border via Kumanovo, Skopje, Tetovo, Kichevo, Struga to Albanian border) is in total length of 315km, around 50% of the railway line has been constructed so far. At the moment, the Republic of Macedonia does not have railway links with the two neighbouring countries: Republic of Albania and Republic of Bulgaria. The lack of these connections is an obstacle to international trade, not only between neighbouring countries, but also through this region in Eastern Europe. The existing stretch of railway line along the Corridor VIII is 152 km long between Kichevo via Skopje to Kumanovo. As part of the Corridor VIII it is planned to construct new rail links connecting the existing east – west line by:

- A 89 km link in the East, from Kumanovo to the Bulgarian Border, which would connect the Republic of Macedonia to Varna (Bulgaria) and to the Black Sea.

- A 66 km link in the West, from Kichevo to the Albanian Border, which would connect Republic of Macedonia to Durrës (Albania) and to the Adriatic Sea.

The Eastern section of the Corridor, between Kumanovo and the Bulgarian Border, includes three sub-sections:

a) Sub-section No 1: Kumanovo - Beljakovce, was previously operational (1994) and reconstruction works of the existing line are under construction since 2014 (under EBRD financing).
b) Sub-section No 2: Beljakovce - Kriva Palanka was under construction until 2004 when it stopped because of lack of funding. Funds are provided in a form of grant and a loan (in total amount of 145mil.EUR). Republic of Macedonia's Public Enterprise for Railway Infrastructure initiated tenders for construction and reconstruction works on the Beljakovce – Kriva Palanka railway section.
c) Sub-section No 3: Kriva Palanka - Bulgarian Border, new construction stretch subject to this project.

Characteristics of Airports

Air transport is organised via two international airports, namely Airport "Skopje" in Skopje and Airport "St. Paul the Apostle" in Ohrid. Both airports are included in the SEETO Comprehensive / Core Network for Airports. The airport in Skopje is in Core network and that one in Ohrid is in Comprehensive network.

Figure 4. SEETO map for Comprehensive/Core network – Airport, Seaport and IWW Port

Skopje airport is the main airport with 34 connections to international destinations in 2016. The airport is given under concession for a period of 20 years to Tepe Akfen Ventures (TAV) Airports, a Turkish Corporation.

In addition to the two airports for international civil aviation, there are 5 sport airports with grassy runways (Skopje - Stenkovec, Kumanovo, Shtip, Bitola and Prilep), suitable for all types of sports aviation and 6 airports for commercial aviation but of which only one is in use, mainly providing services the for the agriculture and the forestry sectors. According to World Economic Forum and the Competitiveness Rankings in 2016 for Quality of air transport infrastructure, the country is ranked 50th out of 140 countries with a note of 4,8 on a scale of 1 for extremely bad and 7 for extremely good.

2.2. Problem Analysis (infrastructure)

2.2.1. Connectivity of Transport Network

The vision for Trans-European Transport Networks (TEN-T) indicate that rail, road, air and sea transport links are perceived as key factor for integration between EU Member States, and also for increasing economic competitiveness. Starting from December 2013, the TEN-T has two layers: the “core network”, which carries the most important passenger and goods flows, and the “comprehensive network”, which ensures access to the core network (Figure 5).

Road Network

Railway Network

Figure 5. TEN-T Core Network Corridors passing through Republic of Macedonia (Road & Rail)

The “core network corridors” facilitate the development of the core network. In June 2015 three core network corridors were identified to be extended for the Western Balkans as well as priority projects along sections of these corridors for possible EU funding over the next years.

The extension of core network corridors to the Western Balkans should ensure closer integration with the EU as well as the basis for leveraging investment in infrastructure, such as EU support through the Western Balkans Investment Framework and the Connecting Europe Facility. The core network corridors, once completed, will provide quality transport services for citizens and businesses, with seamless integration within the region as well as with the EU. According to regulation of EU for the development of the trans-European transport network (TEN-T), the Core network corridors should help to develop the infrastructure of the core network in such a way as to address bottlenecks,

enhance cross-border connections and improve efficiency and sustainability. They should contribute to cohesion through improved territorial cooperation.

The improvement of road, rail and airway connectivity is oriented to link the national road and rail network with EU Corridors and Comprehensive network in the region. Annex 1 of the SEETO Comprehensive Network Development Plan – Multi Annual Plan[6] *discusses in more detail the concrete infrastructure developments.*

Connectivity of road infrastructure

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 (Figure 6).

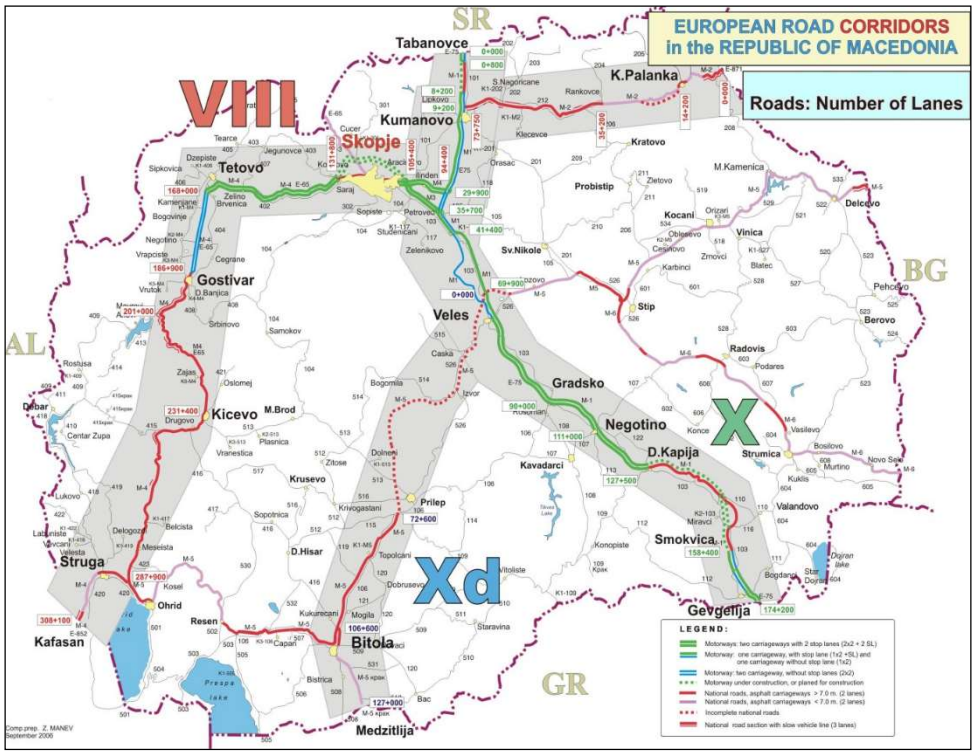


Figure 6. Road network on the TEN-T Corridor VIII and X, X-d

The national trunk roads are in concordance with the TEN-T Corridors and Comprehensive / Core European road network since 2016 (Figure 8), particularly the A1 is a motorway E-75 from Tabanovce (border with Serbia) to Gevgelija (border with Greece) along the route of Corridor X, the A2 includes sections from E-65, E-852 and E-871 along the Corridor VIII (from border with Bulgaria to border with Albania), the A3 consists of former M5/M4 trunk roads which is a part from road sections of Corridor X-d including the road links with Albanian border and trunk roads connection between Eastern and Western regions in the country to the border with Bulgaria, and A4 is a trunk road of E-65 from border with Kosovo to Skopje region and it extends via Sveti Nikole, Shtip, Strumica to border with Bulgaria.

[6] **SEETO Comprehensive Network Development Plan – Multi Annual Plan**
http://www.seetoint.org/library/multi-annual-plans/

Figure 7. SEETO – South East Europe Core Network Links Roads - 2013

Figure 8. SEETO map for Comprehensive/Core road network to the Western Balkans - 2016

The Comprehensive Road network has 850 km lengths and the Core Road network consists of 513 km roads passing through the state territory (Table below).

Table 3. SEETO Comprehensive/Core Road Network in Republic of Macedonia

Comprehensive Network (in km)		Core Network (in km)	
Corridor VIII	298	Corridor VIII	298
Corridor X	195	Corridor X	195
Corridor Xd	117	Route 6a (Kosovo border –Skopje)	20
Route 6a (Kosovo border –Skopje)	20		
Route 8 (Podmolje - Bitola)	78		
Route 10 (Miladinovci – Shtip –Novo Selo)	142		
TOTAL Comprehensive Network	**850**	**TOTAL Core network**	**513**

Source: SEETO Comprehensive/Core road network, 2016

The road infrastructure along the Corridor X has 195 km length passing in direction from Serbia to Greece, and 100 % of this road has been already constructed at modern motorway standards in the full length within the national territory. The Corridor VIII connects the Adriatic with the Black Sea and it is passing through the national territory with a total length of 298 km. The road infrastructure along the Corridor VIII is only 37% on motorway standards.

The Corridor X-d is sub-section of Corridor X starting in Veles goes to Bitola and ends in the border crossing with Greece. The length of this road is 117 km and this road section is 2 traffic lines or one line for each direction.

There are 15 border crossings with the neighbouring countries via road network: 3 with Greece, 3 with Bulgaria, 2 with Serbia, 2 with Kosovo and 5 with Albania. The border crossings and number of entry and exit lines for passenger cars, buses and lorries (Heavy Truck Vehicles - HTV) are shown in the next Table:

Table 4. Number of entry and exit lines of border crossings

Customs Office Name	Entrance				Exit		
	cars	bus	HTV	+ HTV	cars	bus	HTV
Bogorodica (motorway) (MK-GR)	6	2	2	2*	6	2	2
Dojran (MK-GR)	1	1	1		1		1
Novo Selo (MK-BG)	1	1	1	1*	1 (+1)	1	1
Delcevo (MK-BG)	1	1	1		1	1	
Deve Bair (MK-BG)	1	1	1	1**	1	1	1
Pelince (MK-RS)	1				1		
Tabanovce (motorway) (MK-RS)	4	1	1	1**	3	1	1+1
Blace (MK-KS)	2	1	1	1**	2	1	1+1
Jazince (MK-KS)	1				1		
Blato (MK-AL)	2				2		
Kafasan (MK-AL)	2	1	1	1*	2	1	1
St. Naum (MK-AL)	1	1			1	1	

Stenje (MK-AL)	2		2
Djepishte (MK-AL)	1		1
Medzitlija (MK-GR)	7		6

*additional HGV without weight scale ** additional for empty HGV
Source: According to the data from Customs administration

Connectivity of rail infrastructure

The railway line East – West (Corridor VIII) passing through Republic of Macedonia is 315 km long, of which 152 km have been constructed so far. There is no railway connection with Bulgaria and Albania. The existing railway line Skopje (station Gorce Petrov) – Tetovo – Gostivar – Kichevo has 103 km length. This rail line is a part of a new connection of Corridor VIII with Albanian and Bulgarian railway network. The section between Kichevo and Albanian border, about 66 km length, is not yet build but Detailed Design projects are prepared. The section of the railway line of the Eastern part of Corridor VIII between stations Kumanovo and station Beljakovce with a length of 30 km is under construction. The Detailed Design and tender documentation is in progress for the section between station Beljakovce and border with Bulgaria. Whole length of the Eastern section of railway line is about 89 km from Kumanovo to border line with Bulgaria.

The railway line from station Gorce Petrov (Skopje) goes to the border with Kosovo and it is connected with railway network of Kosovo. The railway line Skopje – border with Kosovo has a length of 32 km.

The existing railway line Veles – Shtip – Kochani with a length of about 86 km is a unique railway line in the Eastern part of the country and it ends in Kochani station without other railway connection.

The passenger trains operate along 94 railway stations and halts and the principal stations are situated in the bigger cities as: Skopje, Kumanovo, Tetovo, Gostivar, Kichevo, Veles, Negotino, Gevgelija, Prilep, Bitola, Shtip and Kochani. The railway stations in Kumanovo, Shtip and in Negotino are located too far from the centre of city around 3 to 5 km. These distances are unfavourable for passengers' accessibility to these stations by walking. The railway station in Veles is placed in the dense peopled area and about 1,5 km of railway tracks pass on surface along the urban area which is not good solution regarding road level crossing and traffic safety as well as the environmental impact. The SEETO Comprehensive/Core Network to the Western Balkans includes the railway lines from Corrdior X, X-d, and VIII and also the connection Skopje – Kosovo border crossing (Figure 10).

Figure 9. SEETO – South East Europe Core Network Links Railways - 2013

Figure 10. SEETO map for Comprehensive / Core rail network to the Western Balkans – 2016

The Core Network has a total length of 268 km and it encompasses railway lines of Corridor X and eastern part of Corridor VIII. In the SEETO Report from 2016 is discovered that the railway line of Corridor X through the country has been constructed for maximum designed speed of 100 km/h, and this speed can be achieved on all sections of railway line of Corridor X passing in the country.

Table 5. SEETO Comprehensive/Core Rail Network passing in the country

Comprehensive Network (in km)		Core Network (in km)	
Corridor VIII	152	Corridor VIII	36
Corridor X	215	Corridor X	215
Corridor Xd	146	Route 10 (Kosovo border –Skopje)	17
Route 10 (Kosovo border –Skopje)	17		
TOTAL Comprehensive Rail Network	**530**	**TOTAL Core Rail network**	**268**

Source: SEETO Comprehensive/Core rail network, 2016

2.2.2. Safety of transport sector

Road Transport Safety

The Second National Strategy on road traffic safety for the period 2015-2020 was published in 2014 by the Republic Council for Road Traffic Safety after completion of the First National Strategy for the period 2009-2014. To raise public awareness and change the behaviour on the roads, traffic safety campaigns are funded permanently by the Republic Council for Road Traffic Safety and the Ministry of Interior.

The number of road traffic accidents with casualties decrease 13,6% between the period 2011 and 2015 (Table 6). But since 2015 up to 2017, there is increase in the traffic accidents. The largest number of casualties in 2015 occurs in three types of road accidents: collision between moving vehicles (55,9%), followed by knocking down of or running over pedestrians (18,5%), and run-off-road accidents (14,3%). But at the same time, the number of fatalities in road traffic accidents is 64 victims/million inhabitants in 2012 and increased to 71 victims/million inhabitants in 2015, which is highest compared with the average in EU countries (51 fatalities/million inhabitants in 2014).

Table 6. Traffic accidents involving casualties*

Year	Traffic accidents	Road accident casualties					Seriously and slightly injured
		total	Killed				
			all	drivers	vehicle occupants	pedestrians and others	
2011	4462	7025	172	79	54	39	6853
2012	4108	6281	132	61	33	38	6149
2013	4230	6682	198	90	63	45	6484
2014	3852	6186	130	59	35	36	6056
2015	3854	6061	148	66	33	49	5913
2016	3902	6136	165	88	35	42	5971
2017	4019	6379	155	77	44	34	6224

*Accidents with only material damage are not covered

Source: SSO, MakStat Database

In 2015 the major number of killed in the country are drivers and vehicle occupants about 78%, followed by 22% of pedestrians. In 2016, pedestrians accounted for nearly 21.2 % of all road accident deaths in the EU. The pedestrian fatality rate in the country is similar as Romania, Latvia and Poland data. The major part of the accidents happened inside of urban areas without motorways about 63%, and about 28% of accidents occur outside of built-up areas without motorways. Only 9% of accidents are recorded on motorways, which is similar as EU statistics where about 8% of all fatalities are caused on these roads in 2014.

Table 7. Principal indicators for road safety during 2012-2017

DATA from SSO	Year					
	2012	2013	2014	2015	2016	2017
Registered motor vehicles	350762	411637	437686	451724	461799	474516
Registered passenger cars	301761	346798	371449	383833	394934	403316
Traffic accidents	4 108	4 230	3 852	3 854	3902	4019
Seriously and slightly injured	6 149	6 484	6 056	5 913	5971	6224
Killed total	132	198	130	148	165	155
Population (in '000)	2 062	2 066	2 069	2 071	2073	2075
Length of road network (km)	14 038	14 157	14 199	14 256	14426	14410
INDICATORS						
Registred motor vehicles/1000 inhabitants	170,1	199,2	211,5	218,1	222,8	228,7
Register passenger cars/1000 inhabitants	146,3	167,9	179,5	185,3	190,6	194,7
Number of traffic accidents per 1000 inhabitants	2,0	2,0	1,9	1,9	1,9	1,9
Number of traffic accidents per 1000 vehicles	11,7	10,3	8,8	8,5	8,5	8,5
Number of traffic accidents per 100 km road network	31,1	21,4	29,6	26,0	27	28
Fatality risk (killed/100.000 population)	6,4	9,6	6,3	7,1	8,0	7,5
Fatality rate (killed/10.000 motor vehicles)	3,8	4,8	3,0	3,3	3,6	3,3
Fatality rate (killed/10.000 passenger cars)	4,4	5,7	3,5	3,9	4,2	3,8

Source: own calculation according to data of SSO, Transport and other services, 2015, n. 8.4.16.02-858

The objective of the second strategy is to reduce the number of victims in road accidents to align with the average number of victims in the EU Member States. In that perspective, the number of victims - young drivers should decrease by 30%, the number of seriously injured should be reduced by 40%, and the number of children - victims in the road traffic should be reduced to zero.

The "Study and Action plan for improvement of road safety along SEETO Comprehensive Network", drafted with IPA support in 2015 is based on the Study and action plan for improvement of road safety

along SEETO Comprehensive Network, discussed in Annex 3. The study noted for Republic of Macedonia that:

- Analysis of existing available crash data, as well as procedures for collecting, storing, analyzing and distributing of crash data shows weakness;
- Structure of collected crash data needs improvement in accordance with EU CADaS protocol.
- Collecting of data needs improvements, as well as storage and distribution system;
- Training of police officers is needed.

In 2005 were assessed 169 black spots along the state roads network. This number of black spots is obtained by statistics from the Ministry of Interior collected or registered in a longer period of time. The systematic research about the black spots along the road network in the country is not completed and this number of black spots should be mentioned with reserve.

The principal policy measures and projects concerning ***road*** safety that have been realized, are on-going, or planned are:

- The harmonization of road signs has been planned to be realized on short-term and is still on-going.
- The Road Safety Audit according to the EU acquis envisaged for transposition in the country's road legislative.
- The National Council for Road Traffic Safety has issued the First and Second National Strategy for Road Safety for five years' period. However, more detailed data should be made available for the analysis of road accidents. A road accidents database shall be developed at the level of the whole country and specific black spot analysis shall be carried out together with PESR and PEMP.
- The project concerning preparation of road Risk Maps in accordance with EuroRAP methodology was started in 2012 and finished in 2014. This project includes inspection, coding, analyses and reporting of RAP road safety assessments of 500 km road sections of the major road network in the country. Nevertheless, the most important constraints in preparation of risk maps refer to the quality of input data for traffic accidents.
- The SEETO Multi-Annual Development Plan from 2016 notices that the road safety strategy has been adopted and efforts should be made to improve road safety. The recommendations published in Study for improvement of road safety along the SEETO Comprehensive Network and Action Plan in 2016, are good basis for improvement of road safety.
- The PEMP drafts yearly programs for winter and regular road maintenance works, as well as for investment maintenance aligned with budgetary allocations for protection and maintenance of road network. The yearly programs are in line with the five-year program for development and maintenance of the public roads adopted by the Government upon proposal by the PESR.
- Strengthening the administrative capacity, improving the technical support for the road inspectors and attending of regular trainings for inspection and control by the inspectors. This should be further implemented as recommended.
- It is necessary to improve the coordination and cooperation among the key stakeholders in road safety by strengthening the institutional capacities.

<u>Rail Transport Safety</u>

The data concerning the railway accidents according to types of accident is published by SSO. According to this data the total accidents in railway transport is relatively small and they are not increased in the period 2012-2015 (Table 8).

Table 8. Railway transport accidents in the period 2011-2015

Rail Accidents	2012	2013	2014	2015	2016	2017
Total accidents	115	59	90	115	88	45
Collisions	0	1	0	1	1	0
Derailments	25	11	11	23	16	23
Level crossing accidents	6	20	19	6	14	1
Accidents to persons caused by rolling stock in motion, with exception of suicides	20	23	59	78	12	4
Fire in rolling stock	0	0	0	0	0	0
Other	64	4	1	7	45	17

Source: SSO – MakStat Database

Therefore, the railway network has 132 road crossings in two levels and 291 road level crossings. The control at crossings in 2014 is as follows: 77 with automatic signalization, 202 with road traffic signs, 3 manually operated barriers, barrier-free 1 and 8 guarded level crossings. Such security of the level crossings is insufficient as regards the maintenance of the necessary security level in the railway transport.

Traffic control, acceptance and expedition of trains as well as communication related to the train traffic on the railway network are performed with the safety and signalling and telecommunication devices.

Between stations Tabanovce and Gevgelija on Corridor X there is automatic train control system. The dangerous goods are transported according to the Rulebook for international carriage of dangerous goods (RID) and Law on dangerous goods transport in road and railway traffic.

The main policy measures and projects about ***rail*** safety are:

- The rail infrastructure safety includes implementation of signalling equipment on the collision spots and improvement of security of level crossings. The project is continuously ongoing wherever there is a need, additionally, in line with new implemented projects".
- The rail vehicles safety and transport of hazardous materials are imposed in the legislation concerning rail transport system.

Air Transport Safety

The Civil Aviation Agency (CAA) is organized as an aviation authority of the Republic of Macedonia and its organizational structure provides efficient and timely execution of the safety regulatory functions described in ICAO Annex 19 and Doc 9734 (Safety Oversight System), as well as the other functions related to supervision in relation to safety from acts of unlawful conduct, economic supervision, traffic rights etc. The main CAA regulatory functions are related to securing safe performance of the aviation industry and to safety in aviation in Republic of Macedonia.

The CAA has safety regulatory functions in all aviation areas that are flight operations, airworthiness of aircrafts, airports and air navigation related to:

- issuing of certificates and licenses to the aviation industry entities for conducting some activity in the above-mentioned aviation areas;
- issuing permits, authorizations and ratings of the aviation staff and the powers of the training centers;
- issuing authorizations to medical institutions and doctors to conduct health checks to the aviation personnel;
- initial and continuing oversight to the aviation industry;
- incident investigation in order to prevent future undergarment of aviation safety;
- enforcement measures.

The main policy measures and projects about ***air transport*** safety are:

- Safety and emergency Plans is planned for short term to prepare an aviation security training program.
- Aviation Security Training program is prepared.
- Certification of airports and ANSP (Air Navigation Service Provider) accordingly with the EU regulations ICAO (International Civil Aviation Organisation) full compliance in airports, airfields and Air Navigation infrastructures and equipment. This activity is on-going and planned for 4 years.
- Certification and licensing of operators and staff accordingly with EU regulations. This activity is completed according to the Aviation Law.

2.2.3. Transport system interoperability

The analysis and proposals for development of intermodal transport in the region are published in the Western Balkans Intermodal Study, Support to the Transport Dimension of the SEE 2020 Strategy, SEETO 2016. The authors of this report note that the Intermodal transport in SEETO region is in the initial stage of development and primarily refers to and is identified as the transport of containers in intercontinental traffic.

Intermodal transport in Republic of Macedonia is less developed in comparison with EU countries as suggests the total number of transported TEU outlined in Figure 11, as well as the level of participation of intermodal transport in total freight transport, development of necessary infrastructure facilities, and the level of development of the necessary legislation and other regulations, standards or national transport policy in this area.

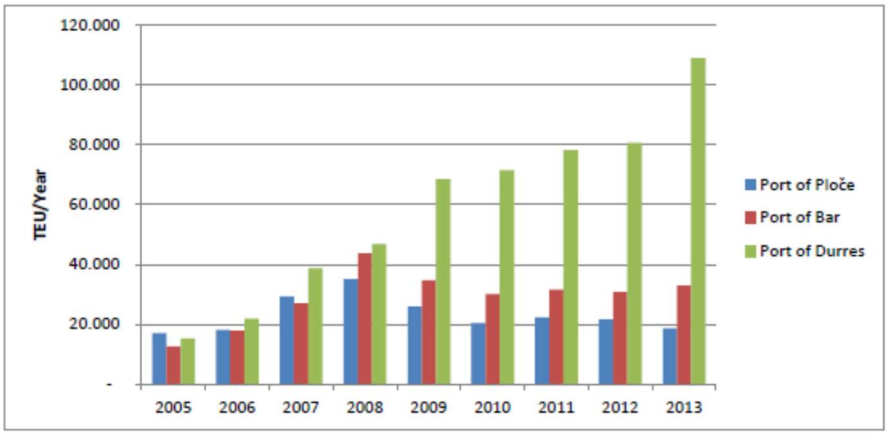


Figure 11. Container traffic in sea ports of SEETO region (Source: Western Balkans Intermodal Study, 2016)

The leader in container traffic in SEETO region is the Port of Durres. The TEU/year for this port constantly increased from 2005 to 2013 but comparing these values with the values of e.g. Port of Rotterdam with 11,6 million TEU/year, the intermodal performance of Durres is rather modest. The main intermodal chains in SEETO region currently existing are shown on the next Figure (Figure 12).

Figure 12. Current main intermodal chains in SEETO region in 2013

The transport infrastructure accessibility to the Port of Durres actually is conducted only by road with two traffic lanes. The rail connection between rail network in the country and rail network in Albania is missing. The Detailed Design projects for a new railway line along the Corridor VIII are finished in 2017. However, the Albanian non-electrified railway line from Port of Dures to border crossing has inadequate geometry for bigger speed and poor track conditions. The good connection with the Port of Durres should include reconstruction and modernization of railway line in Albania.

The port of Thessaloniki has rail infrastructure in all its sections, which are connected to the Greek rail network. The container terminal has 550 m length, 340 m width and up to 12 m depth. It covers an area of 254000 m^2 with a storage section, which can accommodate up to 4696 TEUs on ground slots. In 2014, on an annual basis the container terminal at the port of Thessaloniki handles more or less 370000 TEUs containers. The container terminal, also, has established a management information system, which is a significant tool in developing technological applications that not only optimize the existing services of the company but also improve its competiveness.

The lack of infrastructure facilities for the intermodal transport is reflected primarily in the absence of appropriate terminals in the countries in SEETO region. The result of this situation is that the presence of other intermodal transport technologies, Huck-pack and Ro-Ro, in total intermodal flows is negligible and there are no Ro-La terminals. The transport technology of combined transport Ro-La (Rollenden - Landstrassen or “rolling road”) appeared in European Union countries to facilitate freight traffic, to protect road infrastructure and environmental protection.

The railway transport company JSC MR-Transport in 2015 had carried following TEU units: import 652 TEU with 23,3 thousand tonnes or 4,3 million tonnes-km, export 620 TEU with 17,5 thousand tonnes or 3,9 million tonnes-km and for transit 12995 TEU with 348,7 thousand tonnes or 86,5 million tonnes-km.

The container volumes independent of transport modes for potential intermodal transport is assessed on the regional scale in the Western Balkans Intermodal Study, Support to the Transport Dimension of the SEE 2020 Strategy, SEETO 2016. The potential of TEU in the country is presented in the next Table (Table 9).

Table 9. Potential of Intermodal Transport (TEUs in '000) in the Republic of Macedonia

Country	Transport	2010	2011	2012	2013	Average
Serbia	Export	15,1	15,3	15,5	13,1	14,7
	Import	22,1	21,2	20,5	20,9	21,2
Bosnia and Herzegovina	Export	4,2	3,6	3,7	4,4	4,0
	Import	2,4	4,6	3,3	4,2	3,6
Kosovo	Export	20,1	16,6	15,0	12,1	16,0
	Import	1,8	3,0	2,7	2,3	2,5
Albania	Export	3,8	4,1	3,9	4,6	4,1
	Import	5,5	11,9	4,4	6,1	7,0
Montenegro	Export	1,7	1,7	1,6	1,4	1,6
	Import	0,1	0,2	0,3	0,4	0,3
Other countries	Export	11,1	13,6	11,4	7,9	11,0
	Import	40,0	37,0	48,0	45,3	42,6

Source: Western Balkans Intermodal Study, Support to the Transport Dimension of the SEE 2020 Strategy, SEETO 2016, T.12

The Feasibility Study and Cost Benefit Analysis for Development of strategic multimodal transport nodes in the country, supported by the EU Operational Programme for Regional Development are completed in 2013/14 and recommended the existing marshalling station in Trubarevo near Skopje as optimal location for the development of Intermodal terminal (Figure 13).

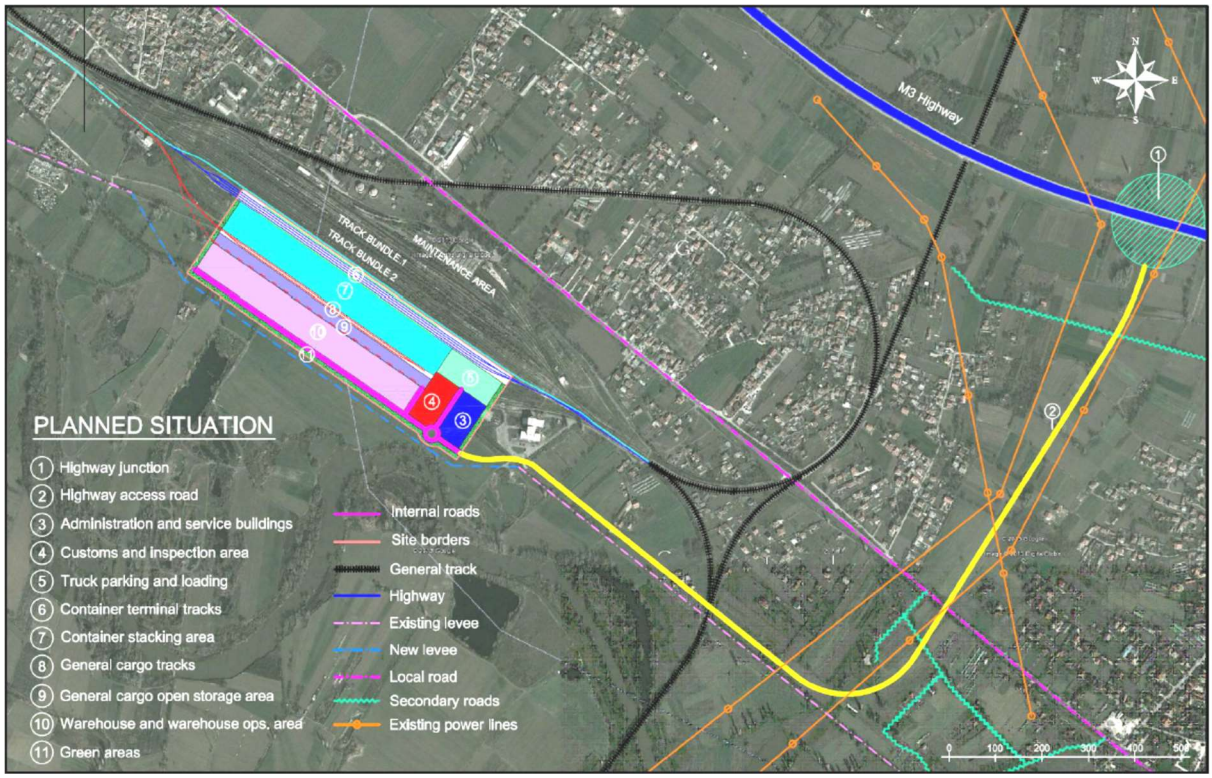


Figure 13. Planned intermodal terminal in the station Trubarevo

The project of construction of new intermodal terminal should be applied in two phases. In the first stage, it should be built the basic infrastructure like: the railway tracks, access to the terminal, transhipment area, parking space for lorries and cars, small warehouse facilities and buildings to provide services like customs terminal management. In this stage the capacity of terminal (reloading equipment, storage capacity, parking area) should be such as to provide about 6000-8000 TEU/year. It is predicted that the phase one shall provide profits (satisfactory return on capital) in a short time period. In the further second stage, it would be possible to set up further or larger warehouses or new specialised areas for different services if the demand for TEU traffic increases. It's necessary to prepare a study for the proposed location in Trubarevo, which shall provide guidelines for its development, construction and operation.

Figure 14. Proposals of the main intermodal terminals (hubs) in the SEETO region

The multimodality of passenger transport is provided at both airports in Skopje and Ohrid. The Airport in Skopje is near the motorway of the Corridor X (E-65 and E-75) and the Corridor VIII (E-850 and E-871) (Figure 15). The airport in Skopje has very good location to become also an important logistics and transport junction, not only for the country but for the entire Balkan region as well.

The airport in Ohrid is primarily a tourism-oriented airport and is connected by road to the south-western edge of Corridor VIII (E-850 and E-871), near the border with Albania (Figure 15). The alignment of a new envisaged railway line along the Corridor VIII passes near to the airport of Ohrid and it would be possible to connect the airport with the future railway line.

Figure 15. Location and connectivity with road network of the airports in Skopje and in Ohrid

The Airport in Skopje has its own parking lot: 1200 marked parking places for cars and 6 marked parking places for buses. The Airport in Skopje has services and facilities to provide better access for passengers with reduced mobility. The bus transport is available every day from the City of Skopje to the Airport in the both directions. The taxi transportation is also available in Skopje and Ohrid Airports. The Airport "St. Paul the Apostle" has 250 car parking lots and 6 bus parking lots.

The Cargo Centre is located at the Airport in Skopje and it occupies a covered storage area of 3000m^2 and possesses equipment for handling air cargo. The capacity of Cargo is sufficient and even large for the present air cargo demand.

The Skopje airport has a particularly good connection with the highway network. The railway line from the Corridor X also passes in the vicinity of this airport (about 4 km away), but until now there is not railway connection at the airport with main passenger station in the City of Skopje distant of about 20 km from the airport.

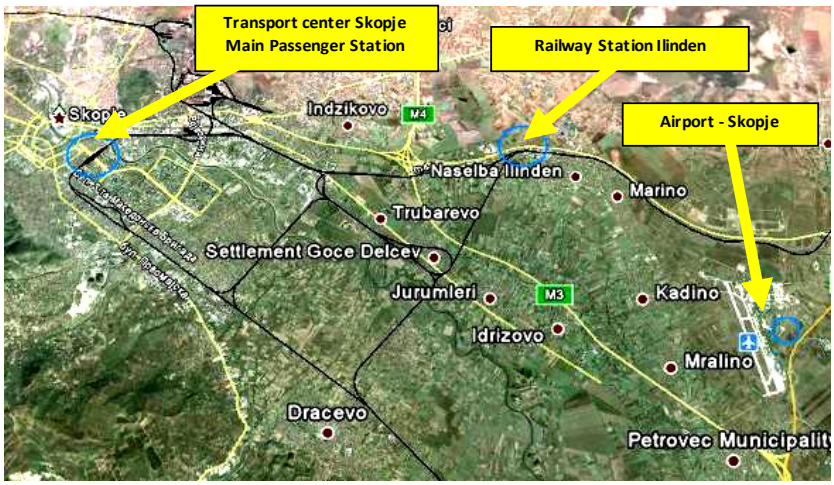


Figure 16. Rail network in the Region of Skopje near to the airport

2.2.4. Border crossings

Waiting times survey

The Waiting times on the Border Crossing Points are one of the most prominent indicators describing the efficiency or deficiency of the Border Crossing points. Efficiency/deficiency of the Border Crossing Points is synergy of three crucial elements: 1) Border Crossing Points Physical Infrastructure as well as access transport infrastructure 2) International and Bi-Lateral Agreements and 3) Border Crossing Points staff's capacity. If one of the previously mentioned elements fails in its operation, then the Border Crossing Point fails in its operation. So, the border crossing waiting time, among others, depends on the successful implementation of the modernization of customs regulations, improvement and operability of the cross-border buildings, enhancement of the battle against smuggling, corruption and illegal human trade. These border crossing issues are seriously hampering the operations of trucking and railways. Republic of Macedonia so far has made some efforts for the implementation of the concepts of "Single Windows" and "One-stop-shop".

At the borders, the railway companies have to change locomotives and staff. The MoTC is making efforts to make "one stop shop" on the rail network with the neighbouring countries. There is one active agreement with Kosovo, that is still not operational and the agreement between Republic of Macedonia and Republic of Serbia was signed in February 2015, with the Protocols between Official Staff from both States were signed in July 2016. The certain activates are in advance stages in preparation of technical documentations for construction of the Joint Border Station at Tabanovce.

The assessment of waiting time on border crossings of motorway on Corridor X is through the data collected during two surveys done on 25 and 26 of May 2017. The border crossing Tabanovce with Serbia and Bogorodica (Gevgelija) with Greece were selected for the physical surveys (Figure 17).

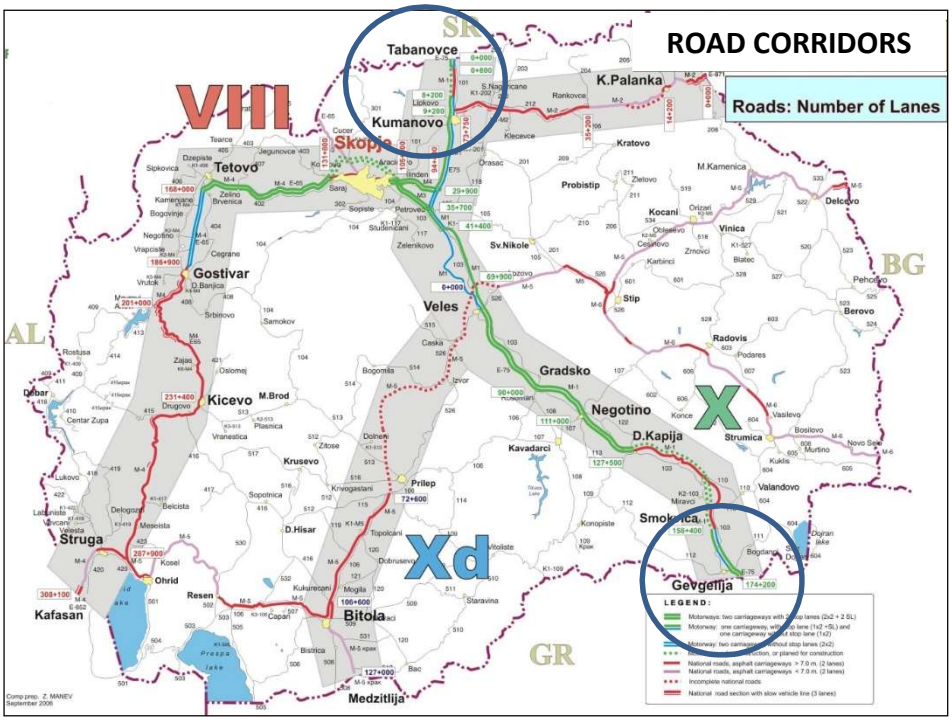


Figure 17. Road corridors and two border crossings where the surveys are carried out

The surveys are made by surveyors and a list of questions is prepared to register answers of interviewed drivers. The vehicles fleet is separated on 4 types of vehicles:

- Category I: motor vehicles with two axles and height at the front axle to 1.3 meters (passenger cars and van) - noted Cars;
- Category II: motor vehicles with more than two axles and height at the front axle to 1.3 meters (passenger vehicles with trailers, jeeps with trailer, wagon and van with trailer) - noted Vans;
- Category III: motor vehicles with two or three axles and height at the front axle 1.3 m or more (trucks and buses) - noted BUS;
- Category IV: motor vehicles with more than three axles and height at the front axle of 1,3 meters (freight vehicles with trailers - trailers and buses with trailer) - noted Lorries.

Border Crossing with Greece - Bogorodica (Gevgelija)

According to the data from Customs Office Bogorodica (MK-GR border) this border crossing has the following infrastructure capacity:

ENTRANCE

- 6 lanes for PMV (cars and vans).
- 2 lanes for BUS.
- 2 lanes for Heavy Truck Vehicles (HTV) with weight scale.
- 2 additional (optional) lanes for HTV without weight scale.

EXIT

- 6 lanes for PMV (cars and vans).
- 2 lanes for BUS.
- 2 lanes for HTV (lorries)

The survey is carried out on 26 of May from 10.00 a.m. to 17.00 p.m. In total there were 232 interviewed drivers for 4 categories of vehicles. The desegregated data by type of vehicles concerning the number of interviewed drivers and waiting time on MK and GR border are shown in the next table.

Table 10. Data from survey on border crossing Bogorodica

Category of vehicle	Nb. of interviewed drivers	MK registered vehicles	Other registered vehicles	Waiting time MK border (minutes)	Waiting time GR border (minutes)
Lorries	68	65	3	**426**	110
BUS	6	2	4	35	7
Vans	21	8	13	7	3
Cars	137	71	66	10	6
TOTAL	232	146	86		

Source: own survey

The average of time of lorries of entrance on MK border is 426 minutes and it is very long waiting time. The infrastructure capacity of 2 lines with weight scale is not sufficient. The construction of new lines with weight scales is necessary to reduce the waiting time on border. About 84% of questioned drivers of Lorries are not satisfied by the huge time of waiting to pass the border.

The average of waiting time of buses of entrance on MK border is 35 minutes, and for vans and cars is about 7 to 10 minutes. The users of these vehicles are 80% to 90% satisfied by the work of the customs office and border police controls.

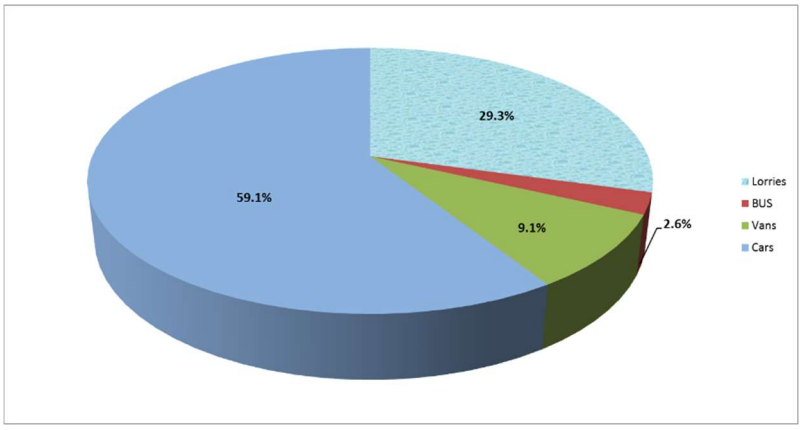


Figure 18. Share of surveyed vehicles by category on Bogorodica border crossing

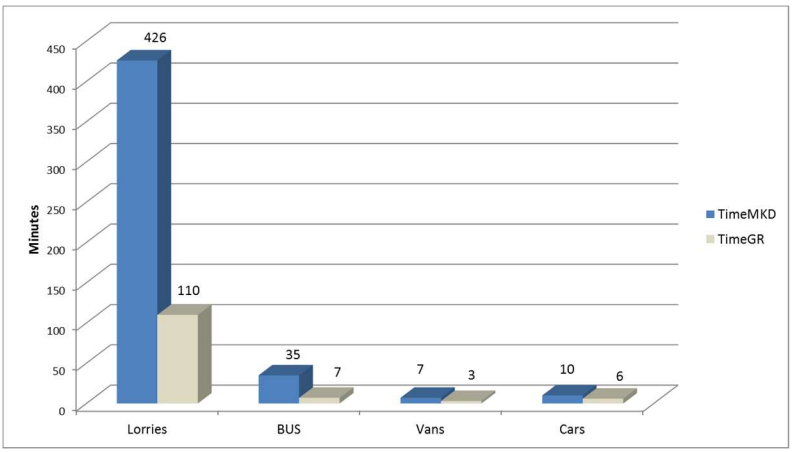


Figure 19. Waiting time at Bogorodica border crossing by category of vehicle

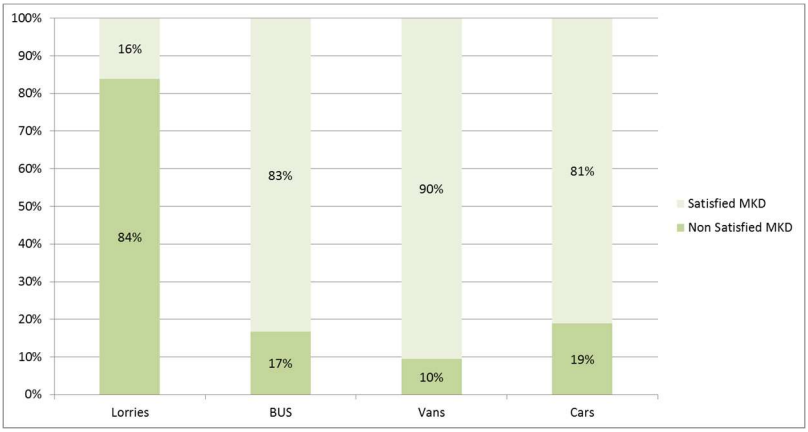


Figure 20 Satisfaction of respondents with the time waiting at Bogorodica border by category of vehicle

Border Crossing with Serbia - Tabanovce

According to the data from Customs Office Tabanovce (MK-RS border) this border crossing has the following infrastructure capacity:

ENTRANCE

- lanes for PMV (cars and vans).
- 1 lane for BUS.
- 1 lane for empty HTV (lorries).
- 1 lane for HTV with weight scale.

EXIT

- lane for PMV.
- 1 lane for BUS.
- 1 lane for empty HTV.
- 1 lane for HTV

Table 11. Data from survey on border crossing Tabanovce

Category of vehicle	Nb. of interviewed drivers	MK registered vehicles	Other registered vehicles	Waiting time border (minutes)	Waiting time border (minutes)
Lorries	120	74	46	**115**	153
BUS	17	4	13	63	80
Vans	11	4	7	11	11
Cars	145	20	125	10	9
TOTAL	293	102	191		

Source: proper survey

The average waiting time for lorries at the border when entering Republic of Macedonia is 115 minutes. About 68% of questioned drivers of lorries are satisfied by the time of waiting to pass the border crossing. The average waiting time of buses at the MK border is 63 minutes, and for vans and cars is about 10 minutes. The interviewed users of these vehicles are about 80% satisfied by the work of the customs office and border police controls.

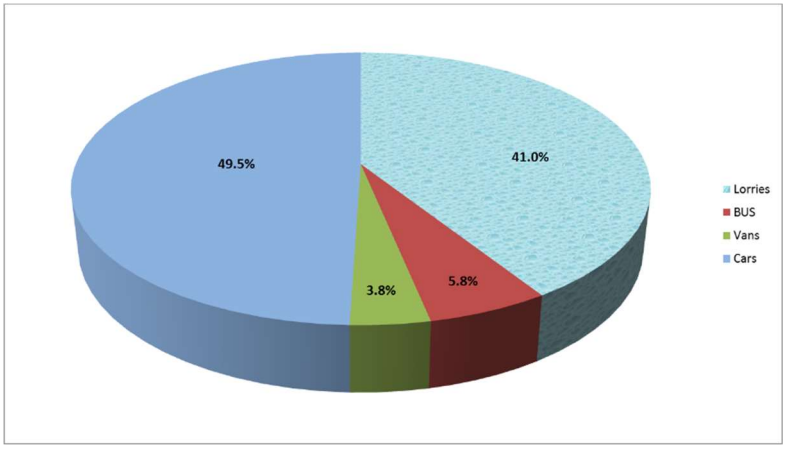


Figure 21. Share of surveyed vehicles by category on Tabanovce border crossing

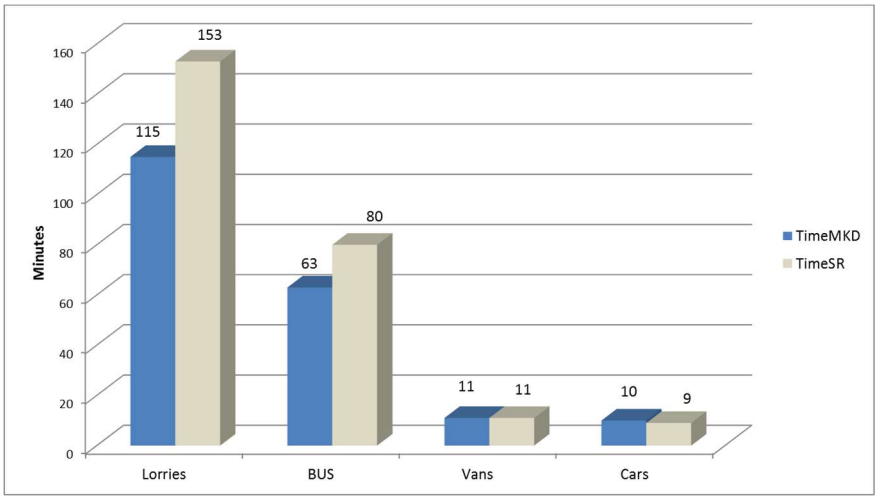


Figure 22. Waiting time at Tabanovce border crossing by category of vehicle

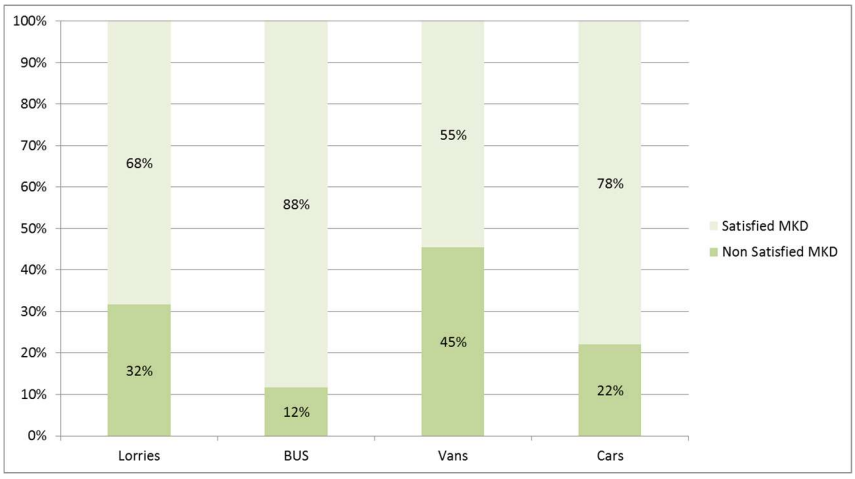


Figure 23. Satisfaction of respondents with the time waiting at Tabanovce border by category of vehicle

Some of planned activities should be realized in the future to improve the actual border crossing time, especially waiting time for lorries or HTV. Several planned border crossings with the neighbouring countries are not open after decades of efforts for interconnection (e.g. border point in region of Berovo with Bulgaria).

2.2.5. Weights and Limits on the road and rail network

The Republic of Macedonia is a landlocked country located in the south-central part of the Balkan Peninsula. The geographical position of the country places it at the crossroads of South-Eastern Europe, making it an important transit route for inland surface transport between Central Europe, the Aegean Sea, the Black Sea and the Adriatic Sea.

The landlocked countries are completely dependent on transit neighbour infrastructure and administrative procedures to transport goods to port. They have characteristic disadvantages compared to countries with coastlines and deep-sea ports, because the trade is more difficult and costly for the reason that they must access in foreign markets through international transport corridors connecting them to ports in neighbouring countries. The supply chain connectivity depends on the quality of physical infrastructure and the quality and sophistication of services, including customs and border control, trade or transportation policies that affect logistics performance. The efficient logistics

services and transport operations are crucial in reducing the effects of distance, in particular at modal interfaces, freight terminals, and ports.

Road transport is the most dominant mode of transport in the country, and it is important to maintain the road infrastructure in good conditions to reduce significantly transport costs. The operation of beneficial road transport should include in the objective the three sub systems as infrastructure, vehicles and operating activities.

The main measures that need to be adopted or improved in road transport are:

- harmonization of road design standards;
- standardization of axle load limits, vehicle weights and dimensions;
- modalities for infrastructure cost recovery (carnet, fuel taxes, tolls);
- improving availability and quality of road transport services;
- improving of road safety.

The interest in *railway transport* is increasing since a great potential exists, which is presently not fully exploited. The rail transport can have an advantage over road transport on long-distance or high-volume corridors. Transport of export/import mainly of high-volume and low-value substance goods (such as minerals) and freight along corridors can be served by well-run railways at lower cost than road transport. Nevertheless, the transport of this type of goods in the country is predominantly by road. In 2015 the SSO published data for transport of freight, which indicate that there are 36,513 million tons carried goods by road or 6759 million ton-km. About 47% of these transported tons are metal ores and other mining and quarrying products, or there are 17,161 million tons of these types of products.

Railway transport offers other potential benefits as lower carbon emissions, congestion, accidents, and reduced cost of road infrastructure. However, because the country is landlocked it is highly dependent on infrastructure investments in neighbouring transit countries such are Bulgaria, Serbia, Albania and Greece.

Traffic volume and transport distance are two factors that determine whether railways can compete with road freight transportation. The Report made by World Bank[7] notes that in the long run, railway freight traffic should exceed 1 million net tons per year for railways to be able to invest in railway infrastructure renewal and maintenance. There is also a minimum distance limit for railways to compete with road transport. Along with lower en-route costs, railways have high terminal costs with the exception of direct trains where trains have a direct link to the final destination. In recent years, as a result of use of unit container trains and efficient loading and unloading of container wagons that gap has been reduced. The container service should be avoided when the distance is too short to sustain a railway service. However, it remains around 400–500 km transport distances where the rail transport is competitive with road freight transport. The railways still offer the most economical solution to transporting non-time sensitive bulk freight on distances of at least 400 kilometres.

The distances from Skopje to the port in Thessaloniki in Greece is about 240 km, to the port of Durres in Albania is 300 km, to the port Bar in Montenegro is 340 km, to the port in Burgas in Bulgaria is 640km. This means that the road freight transport could be more competitive from and to the port of Thessaloniki if the goods are for export/import through this port. The containers by rail and direct freight trains should be more competitive than road transport. The prices of toll payment along the motorway of Corridor X could play a big role in the competitiveness and the modal split if the tariffs of

[7] World Bank-United Nations report in preparation for the 2nd United Nations Conference on Landlocked Developing Countries, 2014

toll payment are estimated using social costs of transport (private cost plus external costs or externalities).

The border crossing time in rail transport of goods usually has shorter border delays than trucks. However, the documentation and other border-crossing requirements for international rail freight movements may be complicated and costly. The SEETO soft measures proposed for the regional countries include also the Effective Border Crossing Agreements between Republic of Macedonia and Serbia for trains' controls.

The implementation of the Intelligent Transport System (ITS), according to EU ITS Directive (Directive 2010/40/EU) and delegated acts, is proposals in the SEETO assessment of ITS deployment on TEN-T Core Network in 2016. SEETO proposal is that the development of ITS projects should be linked to a national ITS Strategy based on priorities and needs for ITS services. It is important to identify needs and priorities of key stakeholders followed by a common ITS Vision outlining ITS priorities and needs and linking to strategic transportation plans. The ITS project in the country is in the pipeline: introduction of communication-information system for traffic control and management (Intelligent transport system-ITS) on motorway of Corridor X.

The preparation of Detailed design of ITS on road Corridor X is in final stage with deadline for preparation end of 2018. The project envisages introduction of ITS on Corridor X, section Tabanovce - Gevgelija in the length of 175 km. In the rail transport the procedure for putting European Rail Traffic Management System (ERTMS) into service is defined in the Interoperability Directive and the Technical Specifications of Interoperability for Control Command and Signalling (TSI CCS), as one of the most essential documents that specify the ERTMS features. Prefeasibility study with WBIF support for deployment of ERTMS on the rail Corridor X is expected to be drafted in the course of 2019.

2.2.6. Conclusions of Actual Situation

The description of existing conditions and key findings identified in the operation of transport sector can be described by the following observations:

- Good infrastructure connection with neighbouring countries and EU TEN-T network is partially completed at the moment. The motorway along the whole length of Corridor X within the territory of the Republic of Macedonia is completed in the first half of 2018. The motorway connection along the Corridor VIII is not realized and the projects are ongoing. The reconstruction works of railway track and railway stations on Corridor X are underway. The railway links with neighbouring railway infrastructures on Corridor VIII are missing. The project for construction of one section of the Eastern part of this corridor (section Kumanovo - Beljakovce) is ongoing and for other sections the detail design projects are in final stage. The good road and rail connection between country transport networks with Kosovo infrastructure is not completed.
- The transport sector needs improvement in the integrated transport infrastructure cycle management. This should be upgraded by an appropriate improvement of infrastructure construction cycle, including planning, approval, procurement, implementation, maintenance and completing of legislative, administrative, operational and organizational improvements. This enhancement of infrastructure cycle management will support to reduce the time and cost for realization of infrastructures, will create an accountable, transparent and effective system for infrastructure management. The experiences in the last years with realization of some projects of road and railway infrastructure show that there is a need of substantially

increased efforts in removing the obstacles for efficient and effective planning, preparation and implementation of infrastructure projects.

- Requirements of beneficiary country legislation and practice in regard of projects infrastructure cycle management are not sufficient to be coherent with the best international practices. National rulebook for Feasibility Studies and Cost Benefit Analysis does not exist. The Detailed Design is influenced by country standards concerning the quality of technical solutions and provisions of materials and technologies to be deployed in construction. An IPA application is planned for preparation of rulebooks for construction design. The country legislation and the practice should be carefully revised and the national legislation should be arranged with the international standards. For example: The Road Safety Audit is in very early stage of legislative proposal and the technical solutions for the needs of people with reduced mobility are not entirely respected in the local technical standards, the EU Technical Standards for Interoperability in rail transport (TSI) are not completely implemented etc.
- The study for strategic multimodal nodes is carried out in 2013 and 2014 according to the best international practices. This study proposes to create one intermodal terminal in marshalling station Trubarevo in the region of Skopje for freight transport. The detailed design of intermodal terminal is not yet prepared and this project is not completed. The multimodal transport in the passenger transportation is not developed until now. The multimodality is present in the area of the both airports in Skopje and in Ohrid between road and air transport. The railway linking with the airports is missing. The project of light rail system for public transport in Skopje and Region of Skopje is not advanced although there are two FS's.
- The partial rehabilitation of about 54 km railway line on Corridor X Tabanovce-Skopje-Veles-Gevgelija has started five years ago and the rehabilitation works are still ongoing. Nevertheless, the other railway lines: Veles-Prilep-Bitola, Skopje – border with Kosovo, Skopje – Tetovo – Gostivar - Kichevo and Veles – Shtip - Kochani are also in need for rehabilitation of track and modernization of signalling, telecommunication systems and improvement of the conditions of the railway stations (10 railway stations along the Corridor X and in Skopje with EU support have already been rehabilitated). The major parts of railway stations have been constructed for 120 axels i.e. 660m maximum usable length of railway track which is not in accordance with a minimum length of 750m prescribed in the AGCT (European Agreement on International Combined Transport Lines).
- Access to the rail transport on the whole territory of the country is not well determined because the rail network has connections to other rail lines only through the Corridor X. In fact, the railway lines in direction East – West have last stop without connection of railway network (railway line Skopje-Veles-Shtip-Kochani ends in station Kochani without other railway connection and it is similar with railway line Skopje-Tetovo-Gostivar-Kichevo which finished in station Kichevo). The bigger cities interesting for railway passenger transport like Ohrid, Struga, Resen, Strumica, Radovis etc. have not railway stations and railway infrastructure in the proximity. Several railway passenger stations are located far from the centre of cities which reduces significantly their attractiveness for passengers.
- The level crossings of road and rail infrastructure put in danger traffic safety. The railway network has 132 road crossings in two levels and 291 road level crossings. The control at crossings is such as security of the level crossings is insufficient as regards the maintenance of the necessary security level in the transport.

- The road traffic safety concerning the road network in the country, measured by specific indicators, is not on suitable level compared with the road safety in the countries in region and in the EU. The number of fatalities in road traffic accidents is 64 victims/million inhabitants in 2012 and it is 71 victims/million inhabitants in 2015 which is highest comparing with the average in EU countries (51 fatalities/million inhabitants in 2014). The objective of the Second National Strategy 2015-2020 is to reduce the number of victims in road accidents similar with the average number of victims in the EU Member States, the number of victims - young drivers should decrease by 30%, the number of seriously injured should be reduced by 40%, and the number of children - victims in the road traffic shall be reduced to zero.

2.3. Proposed Measures (infrastructure)

The proposed infrastructural measures for implementation are presented below according to the general and specific objectives and divided in two clusters," hard" and "soft". Where possible they are clustered per transport mode. More details regarding the actions under each measure are added under the final chapter: "Implementation Plan".

General Objective 1: Strengthen EU integration and promote regional cooperation

Specific Objective 1.1: To complete the SEETO/TeTC Core and Comprehensive Network passing through the national territory and upgrade the standards of the existing road and rail infrastructures to the modern technical and operational standards

The "Connectivity agenda" was established under the Berlin process in 2015 to improve the links within the Western Balkans and between the WB6 (Western Balkan 6) and the EU. The idea of the indicative extension of the TEN-T, goes back from the signing of the MoU for SEETO and now after entering into force of the Treaty will continue under it. In the context of the WB6 the indicative extension of the Trans-European Transport network (TEN-T) including core network, core network corridors and pre-identified priority projects for infrastructure investment has been defined. Extending the TEN-T core network corridors to the Western Balkans ensures closer integration with the EU as well as the basis for leveraging investment in infrastructure, such as EU support through the Western Balkans Investment Framework (WBIF) and the Connecting Europe Facility (CEF).

In accordance with the above, the road and rail infrastructure connections with EU-TEN-T network should be completed in the next period. Implementation of the project focused to planning of enlargement of new road and railway network in the country improving connections with neighbouring countries will be done according to previous finished Feasibility Studies, Detail Designs, Single project pipeline for Transport sector and the SEETO multi annual plan.

Although the **Specific Objective 1.2: Reduce border-crossing times and procedures** was defined mainly focused to Operation and services functions and most of measures related are presented under the Chapter 3, improvement of rail and road infrastructure is critical for completing the task. Even more, the EU's connectivity agenda in the Western Balkans set a priority to make rail and road borders/ common crossing points more efficient removing infrastructure bottlenecks. The measure related, listed below could be considered as an integral part of General Objective 1: Strengthen EU integration and promote regional cooperation.

General Objective 2: Contribute to the improvement of the economic sustainability at the national level

Specific Objective: 2.1: To improve the accessibility and quality of the National transport-infrastructure and transport services

The direct effects of transport investment are to reduce transport costs by reducing travel times, decreasing the operating costs of transport and enhancing access to destinations within the network and thus to stimulate the growth.

The existing road, rail, airport and lake port infrastructure have been constructed since many years. Aiming at improving performances of existing infrastructure, the reconstruction and modernization of existing transport infrastructure and construction of new infrastructure links and also to improve the

access to the transport infrastructure and its supplement infrastructure and facilities are among the key measures under this Specific objective.

General Objective 3: To introduce green mobility and logistic focused to environmental performance of the Transport sector

Specific Objective: 3.1: To develop and improve environmentally friendly and low carbon transport systems

Reducing the negative impact of transport systems on the environment and climate changes is high on the EU agenda and also on the country agenda. The negative impact can be mitigated by introducing noise barrier, improved infrastructure for non – motorized modes of transport in urban areas and lakes, implementing new standards for protection, construction and maintenance of infrastructure.

Specific Objective: 3.2: To stimulate modal shift

Implementing the foreseen measures under this specific objective aimed at modal shift from road to rail for passenger and freight transport would mitigate the harmful effects of the road transport. With improvement of public transport attractiveness and connectivity by adapting infrastructure facilitates, the modal shift for passenger transport to use the public transport will add value to decreasing emissions. In addition, the modal shift measures implementation will improve accessibility for all users, including with disabilities and reduced mobility (air transport access, rail stations and bus stops in urban areas).

Specific Objective: 3.3: Increase the importance of intermodal and multimodal transport in national transport policy

Improvement of connectivity of different modes of transport is an important task for establishment of well develop and functional intermodal and multimodal transport infrastructure. Support to development of multimodal transport is foreseen and construction of Container terminal Trubarevo – Skopje is the first infrastructure intervention in a "waiting list". Enhanced inter and multi modal transport is expected to improve the attractiveness and competitiveness of the whole region and mitigate the environmental impact of heavy-duty vehicles.

General Objective 4: Establishment of reliable and safe transport system

Specific Objective: 4.1: Improve transportation safety

The infrastructure and the cooperation between infrastructure and players is a relevant theme for research on safety in the transport sector. A multi-disciplinary strategy needs to be deployed to improve all transport modes (incl. rail, air, urban and lake transport, vulnerable road users, infrastructure, improved safety management, and a supportive safety culture by increasing the public awareness).

The purpose of the railway track is to provide a stable, safe platform for the train to operate at various speeds. The main issues in track deterioration are deformation of the rail head, dangerous rail cracks, and damage to the sleepers, caused by speed and load of the rolling stock. As a priority, an appropriate action should be taken to ensure safety of existing rail infrastructure. Improving transportation safety on level crossings between different modes of transport is also foreseen.

Specific Objective: 4.2: Improvement of road traffic and road infrastructure safety (incl. Urban transport safety)

The analysis shows that transport safety, especially in road transport, is not on the suitable level.

There is no doubt that good design of road infrastructure can help substantially. An intervention on small infrastructure projects for various vulnerable users on dangerous sections in urban areas is needed. Improvements in road surface and horizontal and vertical alignment at black spots has proved very effective in a number of cases. An adequate funding of "soft" road safety measures is needed, including cooperation and innovation in enforcement, systematic and consolidated data collection, accident investigation, information and awareness-raising.

Specific Objective: 4.3: To introduce IT technologies and Implementing Intelligent Transport Systems (ITS) in the transport sector

Intelligent transportation systems are advanced tools to improve and support protection of critical infrastructure elements. ITS works when the supporting infrastructure – which includes roads, ITS devices, vehicles, terminals, management centres – communicate with each other and with users. For a road authority, the ITS infrastructure components can be divided into four different categories: field, centre, vehicle and telecommunications.

Number of innovative solutions could be initiated within the transport sector. However, the fact that ITS has not been implemented at national and regional level, can be considered as an opportunity to quickly adopt to the current standards and status of ITS in EU, avoiding friction of legacy systems and stakeholders that support them.

Infrastructure measures

N	**SO**	**Mode**	*Transport infrastructure investments*	**Priority**	**Realization period**
MI[8] 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 2	1.1	Rail	Connecting national railway network with the core and comprehensive rail network defined by SEETO (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 4	1.2	Rail	Enhancing and improving the railway infrastructure at the existing border crossings with neighbouring countries	Mid term	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

[8] MI – measure focused to infrastructure

MI 7	2.1/ 3.1	Rail	Technical improvement and modernization of existing railway infrastructure network according to EU-TSI (incl. safety parameters improvement);	Mid to long term	6 to 12 years
MI 8	2.1	Air	Financial support of public transport investments on urban and regional level incl. improvement of airports access infrastructures	Mid term	6 years
MI 9	2.1	Water	Reconstruction/construction of proper marina/lake facilities, incl. special stations for gas supply of the vessels	Mid term	6 years
MI 10	3.1	Rail/Air	Infrastructure development and improvements to mitigate the impact of the railways and airports on the surrounding environment (noise)	Mid to long term	6 to 12 years
MI 11	3.1	Urban	Stimulating environment friendly Urban public transport, development and upgrade/improvement of infrastructure for non-motorized modes of transport in major cities (pedestrian, bicycle tracks)	Mid term	6 years
MI 12	3.1	Water	Defining capacity of the environmental friendly lake transportation (in terms of number and type of vessels)	Short to mid term	2 to 6 years
MI 13	3.2	Rail	Improving the freight connectivity between the freight terminal facilities, railway network and airports	Mid term	6 years
MI 14	3.2 & 4.2	Urban	Adapting infrastructure facilities to improve accessibility and safety for all users, incl. disabled or other vulnerable road users disable (rail stations and bus stops in urban areas)	Mid term	6 years
MI 15	3.2	Urban	Improvement of urban public transport attractiveness and connectivity (development and upgrade/improvement of the urban infrastructure)	Mid term	4 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	2-6 years
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	2-6 years
MI 20	4.2	Urban	Support to small infrastructure projects in urban areas	Short to Mid term	2-6 years
MI 21	4.2	Urban	Safety infrastructure enhancements for pedestrians and disabled or other vulnerable users in urban areas	Short to Mid term	2-6 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

Infrastructure related measures

Strategies, Action plans and programmes are instruments for Sector policy implementation in daily practice. The formulation of the measures presented bellow would also help practitioners to face a

challenge to implement effectively soft transport policy measures formulated. Other sub-group of "soft" measures foreseen are focussed to the dialog strengthening, i.e. cross-border procedures improved, effective coordination with transport cluster and civil society.

By nature, all measures presented below are crosscutting per transport mode or sector.

N	**SO**	**Mode**	*Soft transport policy measures*	**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 24	2.2	Air	Update/develop a National Aviation Development Strategy	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	Support research works and studies for modal shift for freights and passengers	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 29	4.1	Urban	Develop a Sustainable Urban Transport Strategy	Mid term	6 years
MI 30	4.1	Urban/road	Use of modern IT communication platforms and network for road safety campaigns	Mid term	6 years
MI 31	4.2	Roads	Update of National safety strategy and develop an Action plan/launch Transport National Traffic safety Programme	Mid term	6 years
MI 32	4.2	Roads	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

3. PART 3: Transport Sector Measures (operation and management)

3.1 Data collection for transport operations

The data for operation of transport in 2017 show that the road transport is the dominant mode for passenger and freight transportation (Figure 24, Figure 25). The urban transport represents 68,7% in the structure of passenger transport in 2015.

Table 12. Passengers and goods transported by different transport modes in the period 2014-2017

Transport	Mode of transport	Quantities			
		2014	2015	2016	2017
Passengers (number of passengers in '000)	Rail	803	1 022	663	500
	Road	8115	8 074	7221	7775
	Lake	37	39	30	45
	Air	1275	1 560	1788	2017
	TOTAL	10230	10 695	9702	10337
Goods (number tonnes in '000)	Rail	2376	1 566	1358	1558
	Road	31587	36 513	51308	64221
	Air	3	3	3	3
	TOTAL	33966	38 082	52669	65782

Source: SSO, MakStat Database

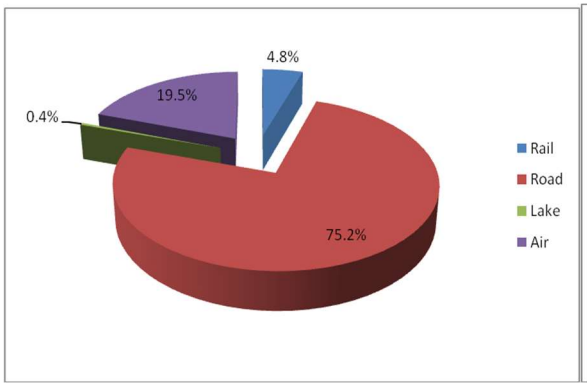


Figure 24. Share of transported passengers by transport mode in 2017

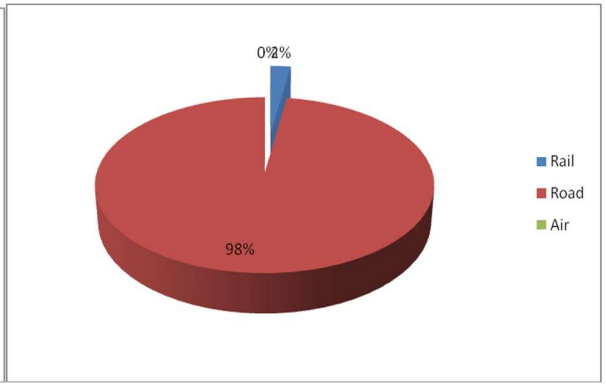


Figure 25. Share of transported goods by transport mode (tons) in 2017

According to data from SSO in the period 2006-2017 the share of road freight transport in the total freight transport is over 91,7% on average, while the share of rail freight transport is less than 8,2%. The statistics in 2016 compared to 2015 show that the quantity of goods carried in road freight transport increased by 40,5% whereas in rail transport it decreased by 13,3%.

Road transport

- **Road vehicles fleet**

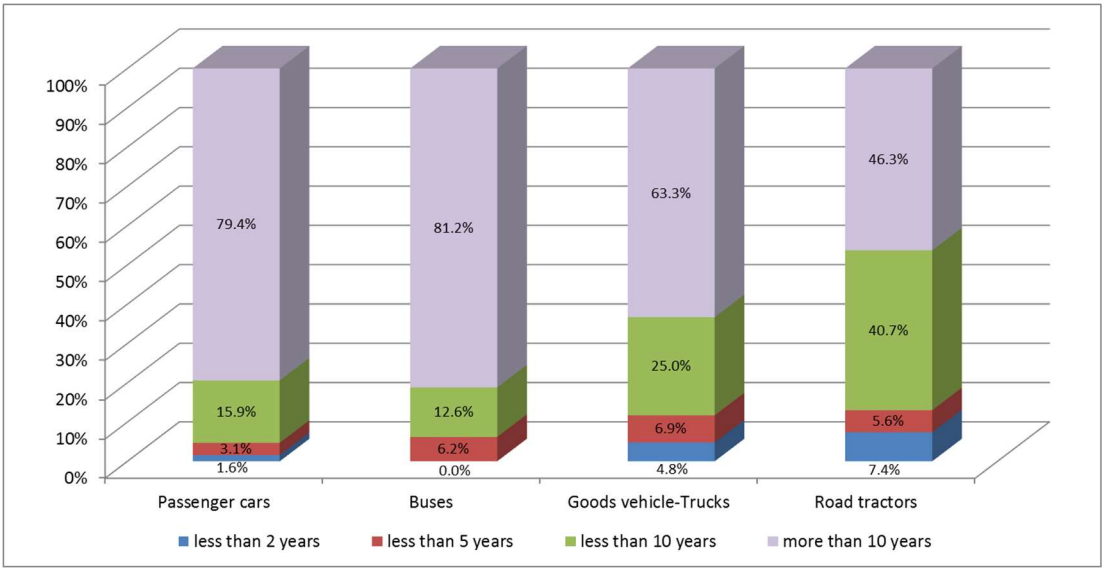
The road vehicles fleet in the country increases constantly for all categories of vehicles. The growth rate of passenger cars between 2010 and 2017 is 40,27% or the average for 5 years is 6,7% per year.

Table 13. Number of registered motor vehicles in the country during the period 2011-2015

Type of motor vehicle	Year						
	2011	2012	2013	2014	2015	2016	2017
Motorcycles	8373	8473	8093	8634	10050	11697	14129
Passenger cars	313080	301761	346798	371449	383833	394934	403316
Buses	2636	2719	3022	3164	3243	3230	3188
Goods vehicles	27917	26542	30167	32123	33237	34669	35912
Road tractors	4636	4219	4934	5248	5451	5640	5778
Tractors	1109	1059	9740	8030	6536	2845	2707
Work vehicles	585	547	585	614	612	623	834
Trailers	5683	5442	8298	8424	8762	8161	8652
TOTAL	**364019**	**350762**	**411637**	**437686**	**451724**	**461799**	**474516**

Source: SSO, MakStat Database, 2017

The fleet is quite old, especially the bus fleet which is quite obsolete and has more than 78% of buses older than 10 years.



(Source: SSO, Transport and other services, 2015)

Figure 26. Average age of road motor vehicles in 2015

The data from 2017 for motor vehicles according to the type of fuel shows that about 47% of vehicles use gasoline, around 50% use diesel and only 2.7% use electricity, gasoline-gas and mixture. The share of vehicles using diesel increased in 2017 regarding the part of vehicles in 2016, or in 2016 about 49% of vehicles consumed gasoline and 48% operated with diesel. The motorization in the country, measured by the number of passenger cars per 1000 inhabitants, has increased sensitively

since 2013 for eight statistical regions Table 14). This growth is principally due to import of old vehicles in the period after 2012.

Table 14. Estimations of rate of motorization by region in the period 2010-2015

REGION	YEAR					
	2010	2011	2012	2013	2014	2015
Republic of Macedonia	*150,8*	*152,0*	*146,3*	*167,9*	*179,5*	*185,3*
Vardar Region	124,3	131,1	103,7	137,2	149,0	156,6
Eastern Region	126,1	122,1	125,4	147,5	157,2	169,2
South-western Region	140,3	144,9	136,3	123,0	172,0	178,3
South-eastern Region	126,3	147,5	152,0	143,9	155,2	162,8
Pelagonia region	151,8	146,9	134,6	175,5	187,9	199,9
Polog Region	103,0	104,7	83,8	128,1	134,3	121,6
North-eastern Region	95,7	59,9	91,4	144,5	150,7	157,0
Skopje Region	216,3	223,1	217,9	228,7	231,5	241,2

Source: calculation according to data from Statistical State Office MakStat

- **Road transport data**

The number of passengers transported in the road transport by buses is 8,074 million or 1248 million passenger-km in 2015. In the national transport there are 7,244 million passengers or 632 million passenger-km, and in the international transport the number of carried passengers is 0,830 million passengers or 616 million passenger-km. The bigger share of international passenger transport by buses is the transport to and from Greece with a rate of 19,7%, then follow the transport to and from Serbia with 19,0%, the transport to and from Bulgaria with a rate of 14,0%, to and from Germany with a rate of 8,7%, to and from Kosovo with a share of 8,3% and the rest of international bus passenger transport is with other countries in Europe. The data for transport of goods shows that in 2015 there are 36,513 million tonnes carried by road or 6759 million tonnes-km. About 47% of these transported tonnes are metal ores and other mining and quarrying products.

- **Traffic of border crossings**

The passenger traffic at the major border crossings is highest at the border crossings with Greece, which is 4,820 million domestic and foreign passengers on entrance and on exit during 2017 (Table 15).

Table 15. Passenger traffic at the major border crossings

Country	Border crossing	Passenger traffic (in million)				
		Domestic	Foreign	TOTAL	Share (%)	Total with country
Bulgaria	Deve Bair	0,598	0,875	1,473	5.6%	2.788
	Delcevo	0,393	0,184	0,577	2.2%	
	Novo Selo	0,353	0,385	0,738	2.8%	

Greece	Bogorodica	1,134	11.700	12.834	48.7%	14.380
	Medjitlija	0.386	0.588	0.974	3.7%	
	Dojran	0.211	0.361	0.572	2.2%	
Albania	Kafasan	0.451	1.039	1.490	5.7%	2.386
	Sveti Naum	0.076	0.285	0.361	1.4%	
	Blato	0.084	0.451	0.535	2.0%	
Kosovo	Blace	0.853	1.878	2.731	10.4%	3.325
	Jazhince	0.316	0.278	.594	2.3%	
Serbia	Tabanovce	1.478	2.009	3.487	13.2%	3.487
TOTAL		6.333	20.033	26.366	100%	

Source: According to Data from SSO, MakStat Database

The biggest part of passenger trips is on the North-South direction at the border crossings with Greece and Serbia which share is 55% and 13% respectively (Figure 27).

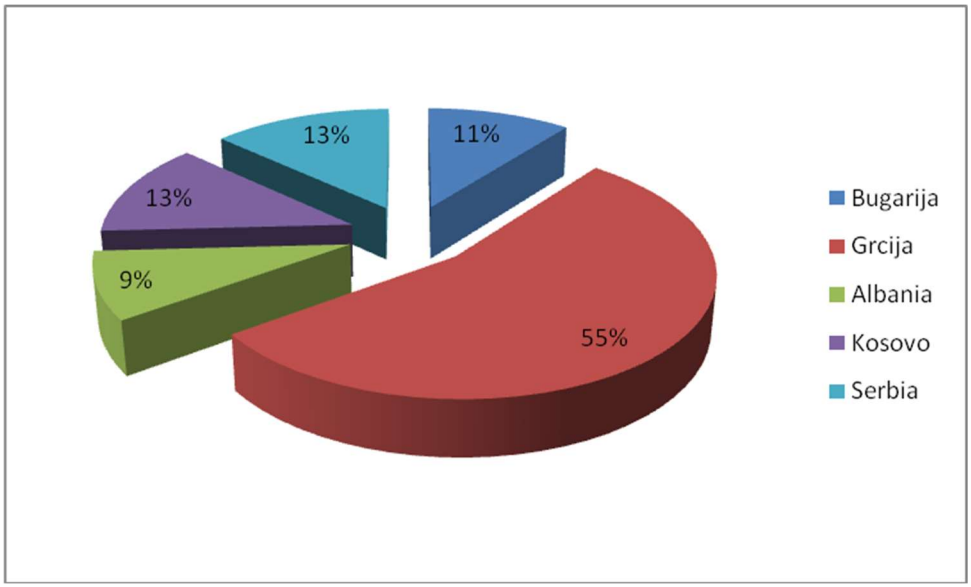


Figure 27. Shares of passenger traffic at the border crossings with neighbouring countries

- **Road network traffic data**

The traffic on the road network differs: the largest volume of traffic is on trunk roads (motorways) near the bigger economic centres such are Skopje, Tetovo, Kumanovo, Strumica, Ohrid and Bitola. On most of these sections, the Average Annual Daily Traffic (AADT) reaches 7000 - 10000 vehicles. The daily average on most other state roads is significantly lower. The World Bank Group published in the Report for Public Expenditure and Fiscal Policy in 2015 that 22% of trunk roads and 90% of regional roads carry less than 3000 vehicles per day, while 62% of the state roads carry only between 1000 and 3000 vehicles per day. The collection of data is by automatic counters and by manual counting dominant on the state road network (Figure 28).

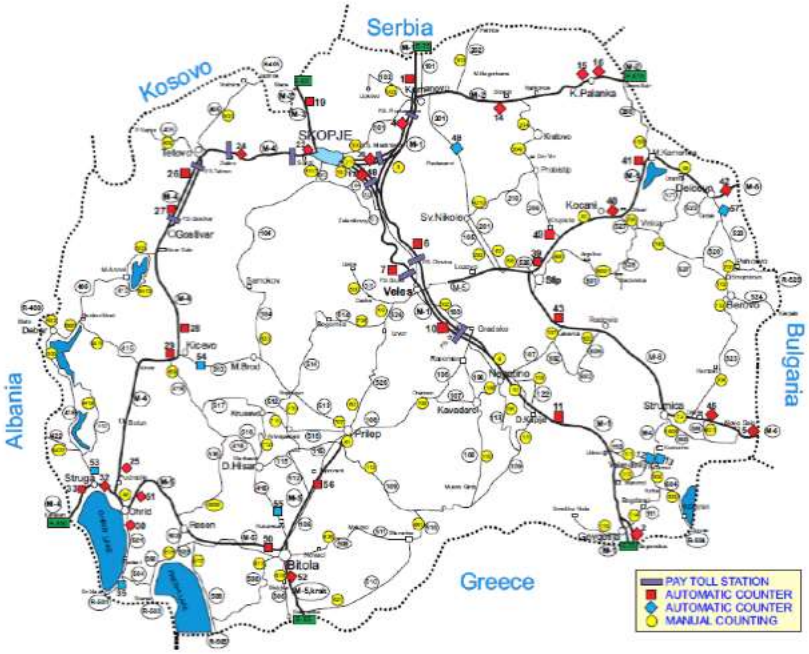


Figure 28 Location of pay toll stations, automatic and manual counters on the road network

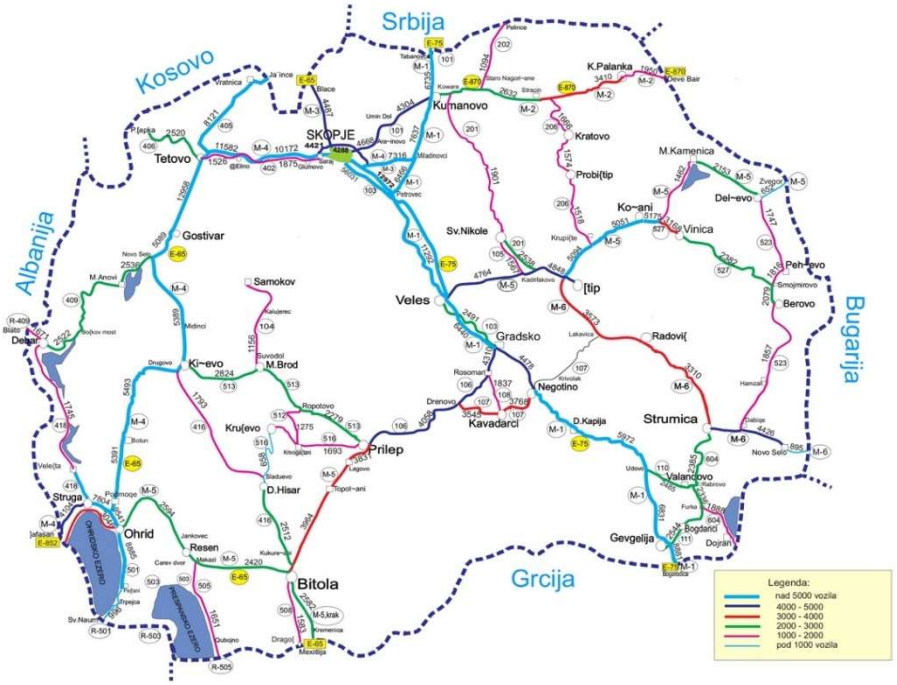


Figure 29. AADT in 2015 on the road network

- **Road network conditions**

The SEETO assessment of the conditions for Comprehensive/Core Network (SEETO Report form July 2016) based on the IRI provided data (IRI-International Roughness Index) shows that as a result of investments in the road sector, the conditions of the road network have improved and up to 75% of the Comprehensive Network and 83% of the Core Network are being rated as in good condition, while respectively 25% and 17% are in medium condition. The SEETO definition for road in good condition is

the one with IRI is between 1,24 - 2,84. There are no road sections reported to be in poor or very poor condition.

The World Bank Group published[9] that in 2013 there were 91% of trunk roads and motorways, 82% of regional roads R1, and 68% of regional roads R2 in good condition. This data referred to the estimations made by the Public Enterprise for State Roads (PESR). The PESR estimated in 2014 that slightly less than 80% of the Macedonian state road network was in good or fair (i.e. sustainable) condition. The most recent assessment of the condition of the road network is not presented.

The World Bank provides an alternative preliminary data on network characteristics based on the Road Network Evaluation Tool (RONET). This data suggests, however, that only 40% of the main roads are in good or fair condition. These estimates are preliminary since key RONET inputs, such as the average unit costs of different types of maintenance, are not available and the estimates are based on international statistics. New data of vehicle fleet characteristics, vehicle operating costs and passenger time costs are also not available.

The PESR has not yet implemented Road Asset Management System (RAMS) in the process of maintenance management planning and decision. Establishing a clear understanding of the condition of the road network is an essential step for improving future investment decisions. In fact, if the RONET number is confirmed, this would suggest that the condition of the state road network is worse than in most countries with a similar income level.

According to the World Economic Forum and the Competitiveness Rankings in 2016 of Quality of road infrastructure, the country is ranking on 88th place (between 140 countries) with a note of 3,5 (notes are between 1 for extremely bad and 7 for extremely good).

Railway transport

- **Rail vehicles fleet**

The unique Railway Operator in the country is the Joint Stock Company for Rail Transport (JSC MR-Transport). By the 2016 the JSC MR-Transport owns the following traction rolling stock:

- 16 AC Electric Locomotives.
- 26 Diesel Locomotives.
- 4 electric motor trains.
- 6 diesel motor trains.

There are in total 42 locomotives with total power in kW of 94492, and out of them, 5 diesel locomotives are not in operational condition. The transport company also has 4 electric motor trains and 6 diesel motor trains, or in total 10 motor trains with total power in kW of 8572.The traction rolling stock is old and about 70% of locomotives and motor trains are manufactured between 1965 and 1974. The project for renewal of motor trains and electric locomotives is on-going and supported by EBRD.

The JSC MR-Transport possesses 67 passenger cars, which include 3118 seats in total. The major part of the passenger wagons, or about 70%, was procured before 1984. The JSC MR-Transport announced that in 2017 only 8 passenger cars regularly travel in the composition of passenger trains. The railway Transport Company has 1161 freight cars with total capacity in tonnes of 60742, and also about 71%

[9] Report for Public Expenditure and Fiscal Policy in 2015 Report n. 93913-MK

of these vehicles are manufactured before 1984. The last investment to purchase 150 freight cars was carried out in 2014.

In 2015 the first of the six new passenger trains arrived and in the beginning of 2017 the last passenger train has been purchased.

- **Rail transport data**

The railway passenger transport declined between 2011 and 2014 and it increased in 2015, while the railway freight transport decreases regularly during the same period (Table 16). This decline of freight transport could be explained by several interruptions of traffic between the port of Thessaloniki-Greece and the border station in Gevgelija due to strikes and social protests in Greece as well as works of rehabilitation of railway track on Corridor X. The growth of passenger traffic in 2015 could be a result of the refugee crisis and transport of migrants from the border with Greece to border with Serbia.

Table 16. Railway transport during the period 2011 - 2015

Railway Transport	Year					
	2011	2012	2013	2014	2015	2016
Passengers carried in '000	1421	1013	853	803	1022	663
Passenger-km in '000.000	145	99	80	80	178	83
Index 2011=100	100,0	68,3	55,2	55,2	122,8	
Goods carried in '000	2770	2539	2283	2376	1566	1358
Net tons-km in	479	423	421	411	278	222
Index 2011=100	100,0	88,3	87,9	85,8	58,0	

Source: SSO – Transport, tourism and other services, 2017

The average distance travelled per passenger in 2015 was 174 km and for freight it was 178 km. The domestic rail passenger transport is dominant in the total passengers transported by rail. In 2014 the national rail passenger transport was 791 thousand passengers, in 2015 it was 1013 thousand passengers or 99,1% of the whole rail passenger transport, and in 2016 the national rail passenger transport counts 660 thousand passengers, or 99.5% of the total rail passenger transport. The international transport was 12 thousand passengers in 2014, 9 thousand passengers in 2015 or this represents only 0,9% of transported passengers by rail, and 3 thousand passengers for 2016. The international rail freight transport is dominant regarding domestic rail freight transport. The domestic freight transport is about 3%, international import is 5,4%, international export is 47,3% and transit is 44,4% of carried goods by rail in 2015 (Figure. **30**).

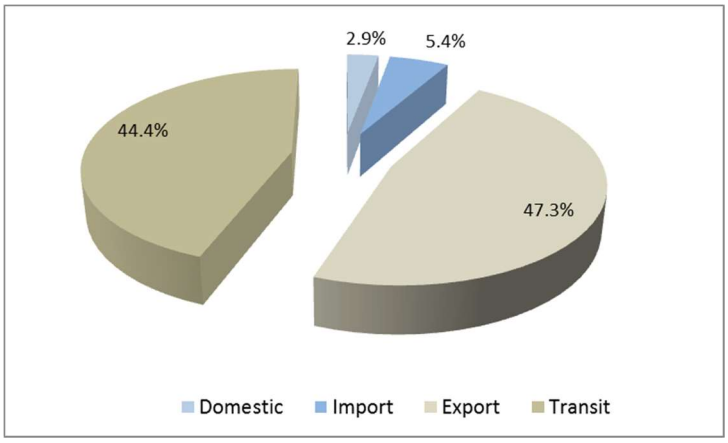


Figure. 30. Share of domestic, import, export and transit freight rail transport in 2015

The decline of transport of freight in 2015 is considerable for domestic, international export and import but it is not changed significantly for transit (Table 17).

Table 17. Domestic and International railway freight transport during the period 2012 - 2015

Railway Transport	Year			
	2012	2013	2014	2015
Goods transported in national trans.				
Goods carried in '000	33,2	26,4	45,4	46,3
Net tons-km in '000.000	2,1	5,4	1,8	2,3
Goods transported in international				
Export - Goods carried in '000	165,2	88,6	143,5	85,1
Export - Net tons-km in '000.000	25,4	14,5	27,2	16,1
Import - Goods carried in '000	1644,3	1405,2	1443,7	739,6
Import - Net tons-km in '000.000	222,9	211,6	197,9	87,4
Transit - Goods carried in '000	696,1	763,6	743,9	694,7
Transit - Net tons-km in '000.000	172,6	189,4	184,5	172,3

Source: SSO – Transport and other services, 2015, n. 8.4.16.02-858 and Statistics from JSC MZ-Transport

- **Rail network conditions**

The partial rehabilitation of about 54 km railway line on Corridor X Tabanovce-Skopje-Veles-Gevgelija has started five years ago and the rehabilitation works are still ongoing. The section from Bitola to Kremenica is under reconstruction and it is envisaged for this rail link to be reopened in the course of 2019.

According to the World Economic Forum and the Competitiveness Rankings in 2016 of Quality of railway infrastructure, the country is ranking on 85th place (between 108 countries) with a note of 2,2 (notes are between 1 for extremely worst and 7 for extremely good).

Capacity and Service Levels on road and railway networks

Road network

The Level of Service (LOS) is a qualitative measure of the quality of road regarding traffic service, involved by USA transport research board and published in Highway capacity manual (HCM). The intention of LOS is to relate the traffic service quality to a given flow rate of traffic. Capacity is defined as the maximum number of vehicles, passengers per unit time, which can be accommodated under given conditions with a reasonable expectation of occurrence.

The Capacity Analysis tries to give a clear understanding of how much traffic a given road can accommodate. The LOS tries to give an answer how good is the existing traffic situation on a given route. Due to the current capabilities of the Transport model, the Level of Service and Capacity have been assessed for the road network only. Capacity and Level of Service of road are based primarily on transport model calculations and using an accepted international definition for Level of Service (e.g. US Highway Capacity Manual).

It is recommended that in the future a possible transport model is to be developed to treat the rail transport at a high level of detail from operational perspective.

The next figures show the Volume/Capacity ratios for:

- the base year 2015;
- DN scenario 2023;
- DN scenario 2030.

Figure 31. Volume/Capacity ratio road network – base year 2015

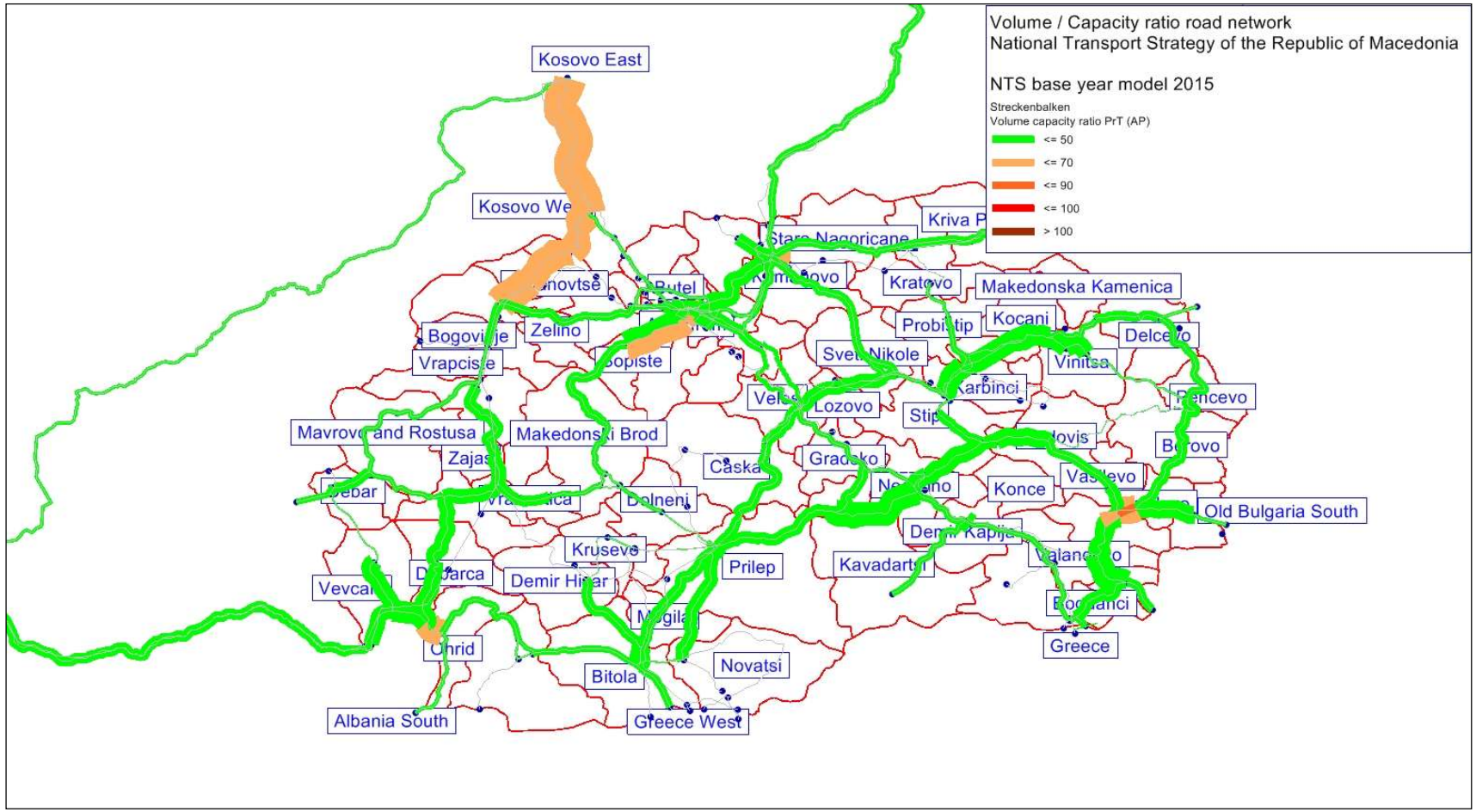


Figure 32. Volume/Capacity ratio road network – forecast DN scenario 2025

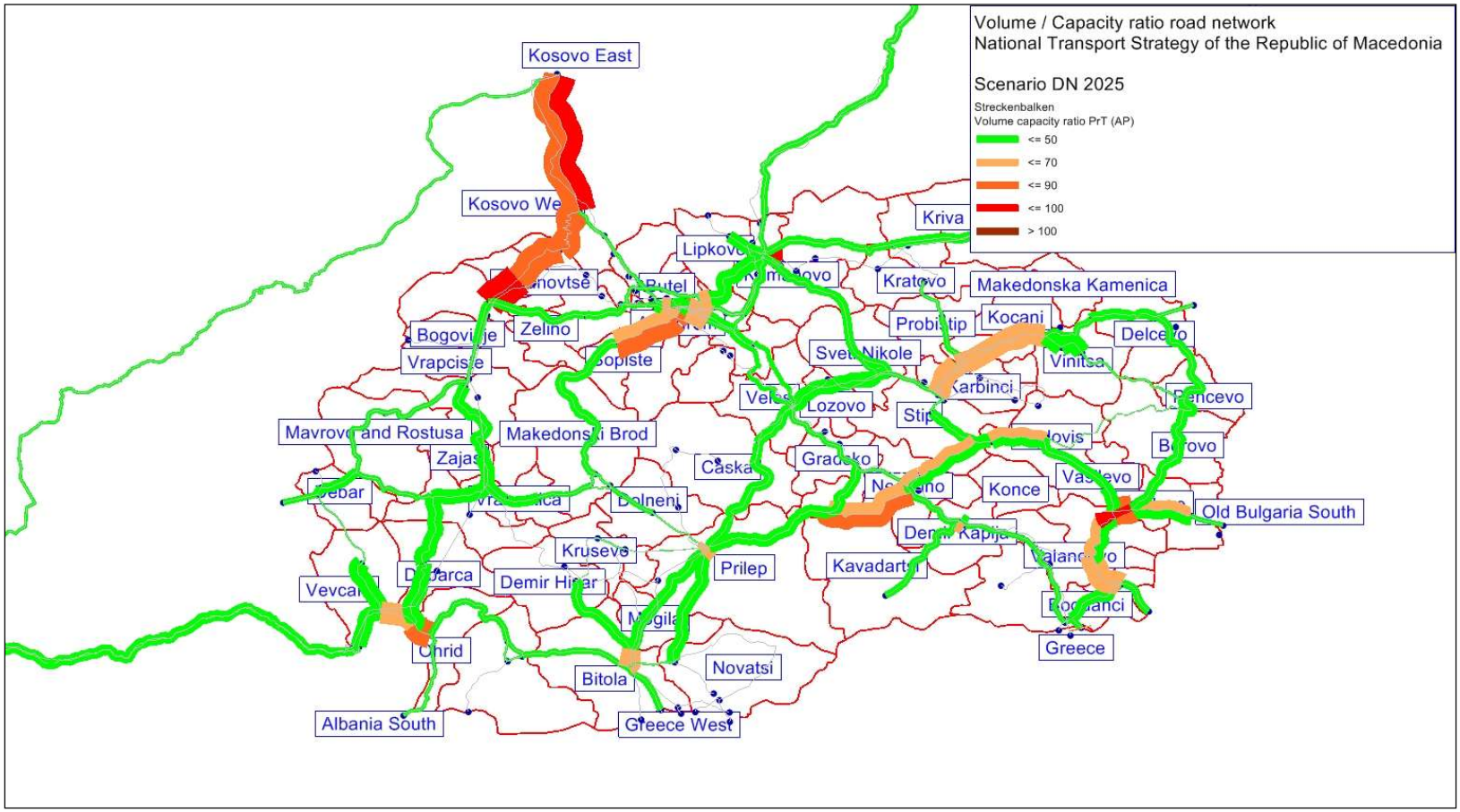
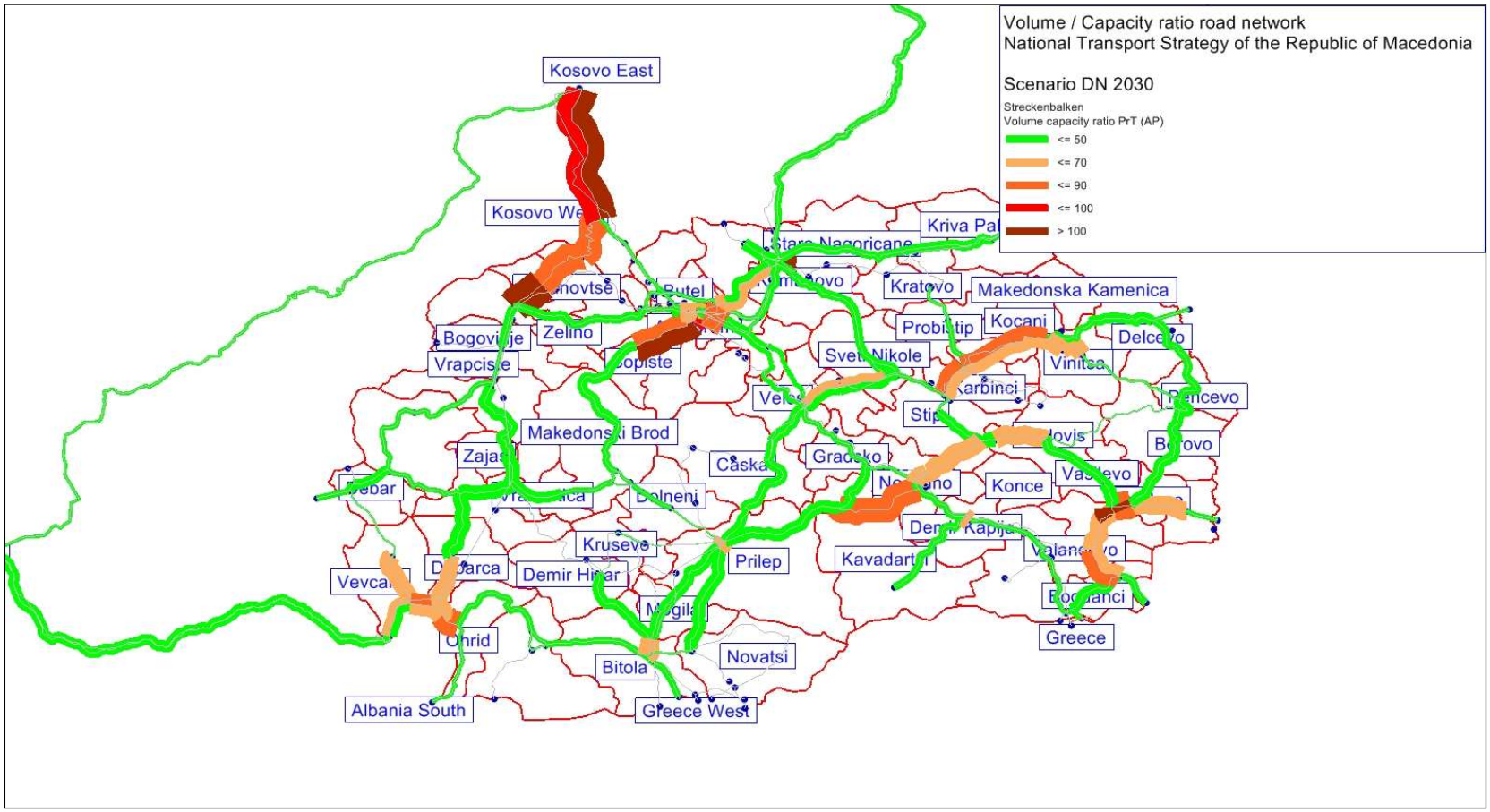


Figure 33. Volume/Capacity ratio road network – forecast DN scenario 2030



The following road sections show a reserve of capacity less than 50% (in peak hour conditions the reserve of capacity might be much less than the one at AADT level):

1. R1203 Tetovo – Jazince, border with Kosovo: reserve of capacity minimum 36 – 37% in the base year, going to an overcome of the capacity with some 10-15 % in 2030 on the sections close to Tetovo. The capacity on this road has been considered to be 6000 PCU/day per direction. Normally the capacity of a standard two lane road is in the range of 18000 – 24000 PCU per day for both directions, thus 9000 – 12000 PCU per day per direction, but in the case of R1203 reduction coefficients have been considered due to the fact that the road is mostly 6 m wide and it crosses numerous settlements with activities close to the road and with many accesses to the main road.
2. R 2134 Dolno Sonje – Skopje: reserve of capacity of minimum 36% on the direction to Skopje in the base year, going to an overcome of 4% in 2030. The capacity of the road is considered to be 6000 PCU/day due to similar considerations as specified above.
3. R1401 in Strumica: reserve of capacity of minimum 30 – 32% in the base year, going to an overcome of 14% in 2030. The capacity of the road is considered to be 6000 PCU/day due to similar considerations as specified above.
4. A4 Strumica to Dabilje: reserve of capacity of minimum 46 – 48% in the base year, going to 10 – 23% in 2030. The capacity of the road is considered to be 6000 PCU/day due to similar considerations as specified above.
5. A4 Dabilje - Novo Selo: reserve of capacity of minimum 39 – 42% in 2030. The capacity of the road is considered to be 6000 PCU/day due to similar considerations as specified above.
6. A3 Ohrid – Podmolje: reserve of capacity of minimum 47% in the base year and 13 – 14% in 2030. The capacity of the road is considered to be 6000 PCU/day due to similar considerations as specified above.

Aside from the road sections identified above, the following road sections shows a reserve of capacity less than 50% in the year 2030 (no needs for capacity increase in the base year):

7. R1102 Jurumleri – Skopje: reserve of capacity of minimum 31 – 32% in 2030. The capacity of the road is considered to be 6000 PCU/day due to similar considerations as specified above.
8. Bd. Alexander the Great in Skopje: average reserve of capacity of 49% at AADT level. Considering that the boulevard is in the urban area and considering the capacity restrictions at junctions with other important arterials it can be concluded that at the peak hours the capacity would be overcome. However, a specific detailed study is needed for Skopje area – as for example a SUMP for the whole metropolitan area of Skopje.
9. R1104 from the junction with M4 to Aracinovo: reserve of capacity of minimum 38 – 39% in 2030. The capacity of the road is considered to be 6000 PCU/day due to similar considerations as specified above.
10. R1104 from Aracinovo to Kumanovo: reserve of capacity of minimum 48% in 2030. The capacity of the road is considered to be 6000 PCU/day due to similar considerations as specified above.
11. A3 Shtip – Vinica: reserve of capacity of minimum 28 – 32% in 2030. The capacity of the road is considered to be 6000 PCU/day due to similar considerations as specified above.
12. R1103 between A1 and Negotino: reserve of capacity of minimum 18 - 19% in 2030. The capacity of the road is considered to be 6000 PCU/day due to similar considerations as specified above.

13. R1103: Negotino – A4: reserve of capacity of minimum 36 - 44% in 2030. The capacity of the road is considered to be 6000 PCU/day due to similar considerations as specified above.
14. R1401 from the junction with R1105 to Strumitsa: reserve of capacity of minimum 31 – 36% in 2030. The capacity of the road is considered to be 6000 PCU/day due to similar considerations as specified above.
15. A4 Konce – Radovis: reserve of capacity of minimum 44 – 38% in 2030. The capacity of the road is considered to be 6000 PCU/day due to similar considerations as specified above.

Railway Network

It is necessary to identify and indicate the main quality indicators in the railway transport to assess the level of services. The main problems confronted in the carriage of goods by rail are the reliability, flexibility, punctuality, information management, and the average traffic speed. All these factors affect the prospective customers in the determination of the mode of transportation of goods. The quality of passenger rail transport considers frequency of trains, punctuality, time of travel, safety, conditions in the trains and in the railway stations, signals and information useful for the passengers, rail accessibility.

The Railway Regulatory Agency in 2012 conducted a survey for assessment of the quality of passenger rail traffic services. The conclusions come from this survey are:

- Passengers made the choice of train transportation only because of the low prices of the ticket;
- Passengers are not informed about their rights as a passenger in the rail transport;
- Passengers are well informed about the timetables and discounts of travel tickets;
- Passengers are not satisfied with the hygiene in the trains and in the passenger stations;
- Passengers are satisfied with the punctuality and respect of timetable;
- Passengers are neutral about the heating in winter conditions and seat capacity.

These results shows that the quality of services offered by the JSC-MR – Transport is not satisfactory and the passengers in most cases use rail transport only because the train tickets are cheaper than the bus tickets. In the past couple of years, several measures were introduced in order to increase the interest for usage of the rail transportation: free of charge weekend for students up to age of 27, 50% discount for students, free of charge weekend for retired people etc.

The capacity of a rail infrastructure has been traditionally measured in trains per day through theoretical standard capacities based on its characteristics. The comparison of the existing traffic with this theoretical capacity provided an indicative value of its usage and eventually, of the need to invest to avoid congestion. This methodology is basic, as there are other parameters that affect the number of trains able to pass a given section in one day, such as the types of traffic, their heterogeneity, and usage of tracks over the day, maintenance needs and timetable.

The UIC Code 406/2013 provides a unique approach to capacity evaluation and it is recommended for infrastructure managers that use IT support in their evaluations. The capacity of railway line which has Automatic Block Signals (ABS) could be about 80 trains /day[10]. The capacity of the rail network in the country in 2015 calculated by the PE ME-Infrastructure is presented in the next table:

[10] RAIL-PAG Railway Project Appraisal Guidelines, European Commission and European Investment Bank, 2005

Table 18. Capacity of railway network in the country

N.	Railway line	Capacity N° of pairs of trains	Offered capacity
1	Tabanovce-Skopje	71	64
2	Skopje-Veles	71	64
3	Veles-Gevgelija	71	46
4	Skopje-Volkovo (Kosovo	58	53
5	Skopje-Kichevo	13	12
6	Veles-Bitola	12	11
7	Veles-Kochani	9	8
8	Skopje railway node	65	58

Source: According to calculations of PE MR-Infrastructure

Table 19. Capacity Occupancy by JSC MR-Transport in 2015 (in %)

N.	Railway line	Freight traffic	Passenger traffic	Locomotive traffic	Capacity occupancy
1	Tabanovce-Skopje	25,7	8,3	18,8	52,8
2	Skopje-Veles	25,0	15,3	15,3	55,6
3	Veles-Gevgelija	25,0	4,2	15,3	44,4
4	Skopje-Volkovo (Kosovo	3,3	1,7	1,7	6,7
5	Skopje-Kichevo	6,9	13,8	6,9	27,6
6	Veles-Bitola	0,0	29,6	7,4	37,0
7	Veles-Kochani	0,0	9,5	0,0	9,5
8	Skopje railway node	32,6	0,0	16,0	48,6

Source: According to calculations of PE MR-Infrastructure

Table 20. Total Capacity Occupancy in 2015 (in %)

N.	Railway line	Occupancy of PE MR-Infrastructure	Occupancy of JSC MR - Transport	Total capacity occupancy
1	Tabanovce-Skopje	10,8	52,8	63,5
2	Skopje-Veles	11,5	55,6	67,0
3	Veles-Gevgelija	36,8	44,4	81,3
4	Skopje-Volkovo (Kosovo)	11,7	6,7	18,3
5	Skopje-Kichevo	18,6	27,6	46,2
6	Veles-Bitola	18,9	37,0	56,0
7	Veles-Kochani	19,7	9,5	29,3
8	Skopje railway node	19,1	48,6	67,7

Source: According to calculations of PE MR-Infrastructure

The civil works for renewal of railway track along the section Veles-Gevegelija on Corridor X needs to close this railway section for traffic and to allow execution of track renewal works. The railway line is closes for traffic in a duration of 8,5 hours on a daily basis. This situation results in 36,8% occupancy of traffic capacity of this railway line by PE MR-Infrastructure. In general, the capacity of the railway network is large enough for traffic realized in 2015.

Air transport

In 2008 the Macedonian Government signed a contract with the Turkish company Tepe Akfen Ventures (TAV) for a twenty-year concession during which this company would manage two existing airports: in Skopje and Ohrid. The concession period started in 2010 and the planned works in the concession contract included the construction of a new airport terminal building in Skopje, extension of the runway, new administration building, and new access road with parking facilities increasing the capacity of Skopje Airport to four million passengers per year with plans to turn Skopje Airport into a major transit and cargo hub for Southeast Europe. The Ohrid airport has completed the modernisation of its terminal building and VIP sections. The concession contract also includes the construction of a third airport intended for cargo transport near the town of Shtip. The total amount of the foreseen investment was 200 million euros with 30 to 40 million euros' total concession payments to the Macedonian Government over the 20-year concession period. The modernization and reconstruction of both main airports in the country are made and the operation with air transport is well governed by the concessionaire. The result is a growth of the air traffic, considerably during the period after the concession agreement with TAV – Turkish airports operator.

Table 21. Air traffic during the period 2013-2015

Air Traffic	2013	2014	2015	2016	2017
Traffic of domestic and international airline companies at the airports (in '000)					
Total Number of flights	12,380	13,968	15,585	16,879	18,130
International transport-total	11,155	12,673	14,350	15,719	16,796
International transport regular	9,868	11,603	12,619	14,461	15,377
International transport charter	1,287	1,070	1,731	1,258	1,419
Passenger traffic of domestic and international airline companies at the airports (in '000)					
Total passengers	1,066,628	1,278,327	1,560,683	1,794,261	2,027,345
International transport-total	1,059,588	1,274,836	1,552,137	1,788,233	2,017,142
Freight traffic of domestic and international airline companies at the airports (in '000.000)					
Commercial /international transport - total	2,268	3,116	2,341	2,619	2,496

Source: SSO – MakStat Database, 2018

The Airport in Skopje is the main airport for air passenger traffic with about 92% of all transported passengers in 2017 (Figure 34). The air cargo is almost entirely on the Airport in Skopje.

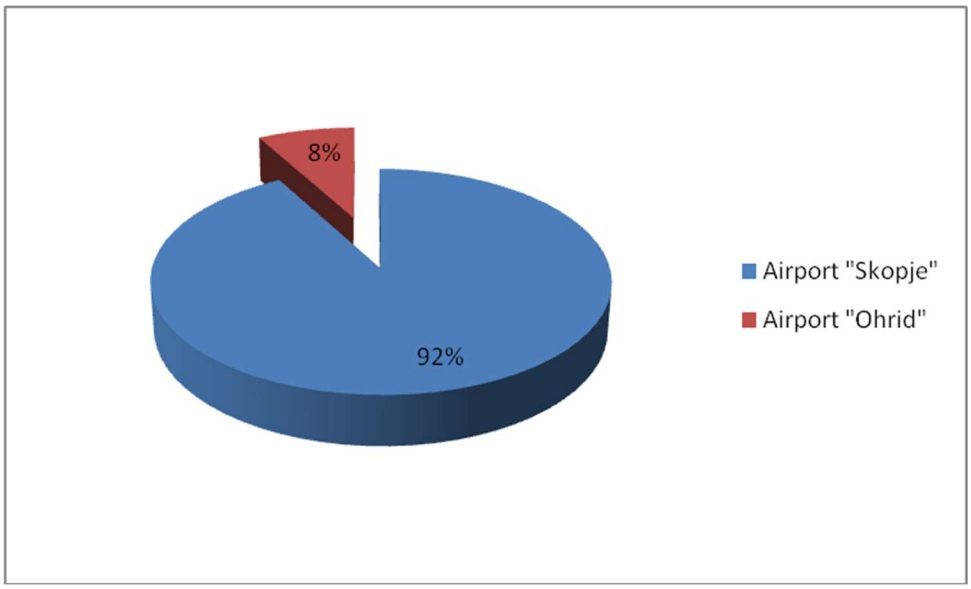


Figure 34. Share of air passenger traffic on the airports in Skopje and Ohrid

Waterway transport

Waterways transport of passengers exists only on the Ohrid Lake. The ships are small, containing from 25 to 150 seats. Line transport is carried out on a fixed route and by previously set schedules of sailing, non-line transport is often used for night cruises for transport by boat to a group of passengers who have the same final destination.

The number of passenger vessels in 2017 is 4 which have 530 passenger seats. The number of carried passengers in the same year is 44.51 thousand passengers from which all are transported in the national transport. The average distance travelled by passenger is 23 km.

This transport has potential and could contribute to the planned development of the Ohrid region. If waterway transport on the lake succeeds to attract a greater number of trips, this transport mode could also contribute in building a sustainable transport system in the region.

Intermodal transport

The intermodal container transport in the country is undeveloped. This transport is used only for international transport, particularly for transit of freight from the Port of Thessaloniki through the territory of the country by the railway line along the Corridor X. The infrastructure of intermodal facilities and terminals in the country is insignificant. There is one small container terminal close to Skopje at Tovarna, near to the railway station. The terminal is equipped with one gantry crane with limited transhipment capacity. Storage area is also small, limited to 600 TEUs. The position of the terminal is established for transport offer on the axis Belgrade-Skopje-Thessaloniki.

The data for intermodal freight transport is published by SSO and JSC MR-Transport. The data shows that the dominant role in the intermodal freight transport is transit which is 86,3% in 2012 and 89,5% in 2015 of all goods carried by containers.

Table 22. Data for intermodal transport in 2012

	2012

Indicators	Export	Import	Transit	Total
Carried goods, tons	19870	29738	311988	361596
Net tonne kilometres (000)	1839	5861	77373	85073
Loaded TEUs, number of containers	533	722	9071	10326
Empty TEUs, number of containers	273	620	661	1554

Source : SSO, MAKStat data, code ES213M16

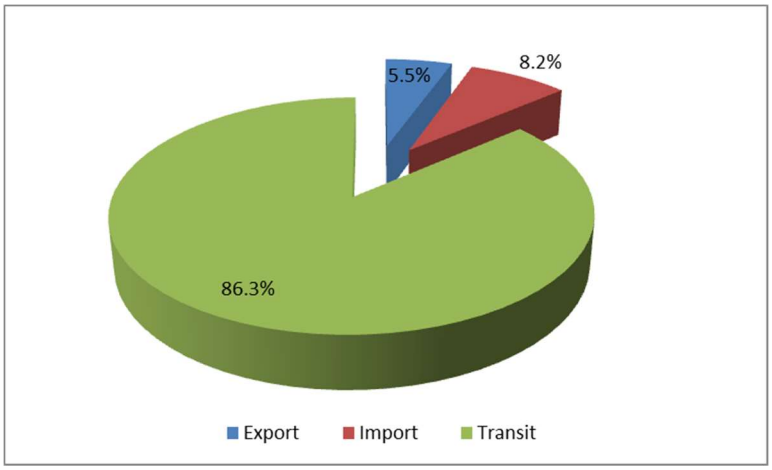


Figure 35. Share of Export, Import and Transit in the intermodal transport in 2012

Table 23. Data for intermodal transport in 2015

Indicators	2015			
	Export	Import	Transit	Total
Carried goods, tons	17494	23265	348731	389490
Net tonne kilometres (000)	3897	4263	86485	94645
Loaded TEUs, number of containers	620	652	12995	14267
Empty TEUs, number of containers	281	19	407	707

Source: SSO, MAKStat data, code ES213M16

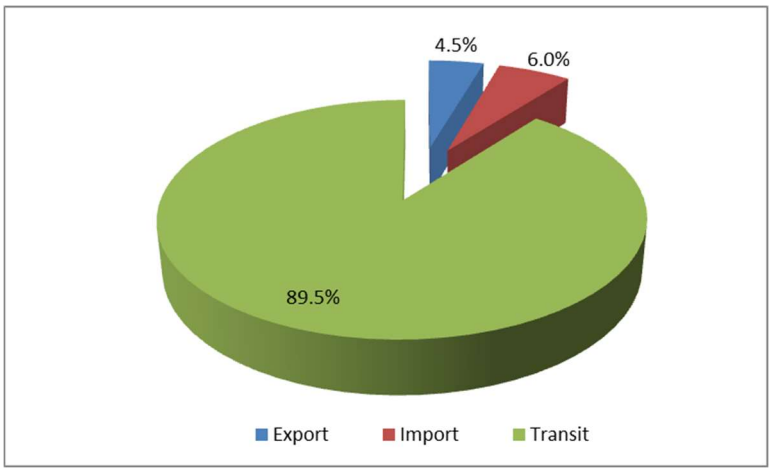
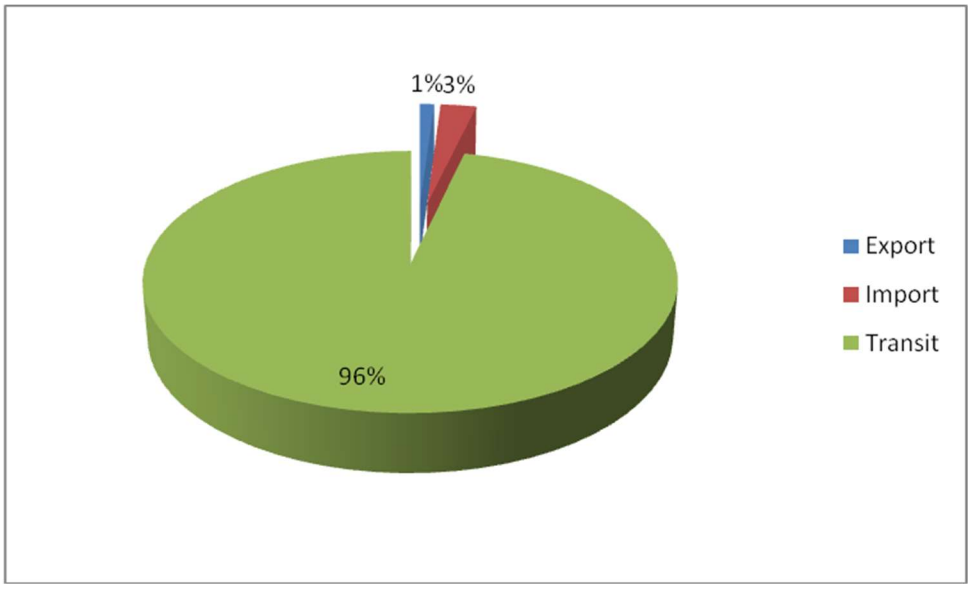


Figure 36. Share of Export, Import and Transit in the intermodal transport in 2015

Table 24. Data for intermodal transport in 2017

Indicators	2017			
	Export	Import	Transit	Total
Carried goods, tons	4594	11331	419768	435693
Net tonne kilometres (000)	601	1008	104103	105712
Loaded TEUs, number of containers	32	368	19360	19760
Empty TEUs, number of containers	398	1	1419	1818

Source: SSO, MAKStat Database



3.2 Problem Analysis (operation and management)

3.2.1 Maintenance of road infrastructure

Each year the PESR prepares an annual Programme for Maintenance and Protection of State Roads, financed from its own funds including routine, periodic and winter maintenance of state roads. The maintenance of trunk and regional roads plus maintenance of signalization and traffic counting are obligations of the Public Enterprise Makedonija pat (PEMP), and for local roads the maintenance is often undertaken by local public companies or private enterprises via one form of concession. The PEMP operates as PESR's direct contractor, under an annual contract signed with the PESR. The PEMP currently employs about 850 workers, of whom 30 are engineers and it is responsible for the maintenance of 4000 km of paved roads. The PEMP has five Branch Offices (Figure 15) coordinated by the Directorate. The Branch Offices follow: Motorway with 294 km length of roads for maintenance, Skopje with 1149 km length of roads for maintenance, Veles with 662 km length of roads for maintenance, Bitola with 1300 km length of roads for maintenance, and Shtip with 1011 km length of roads for maintenance.

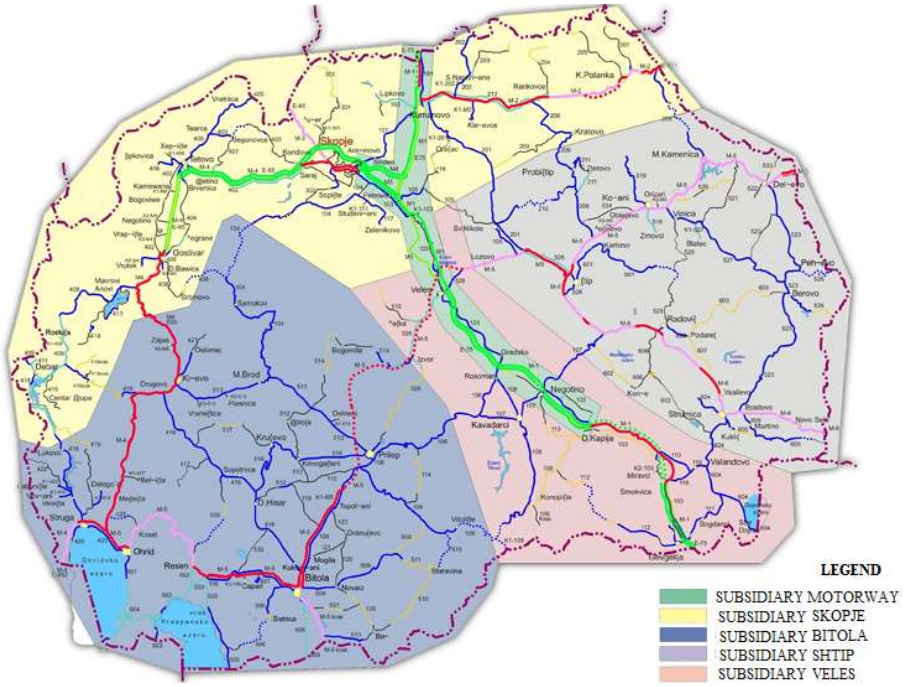


Figure 37. Organisation of the PEME for maintenance of state roads in five Branch Offices

The PEMP is in financial debt and needs to purchase new mechanization for regular and winter maintenance of roads. The winter maintenance activities are awarded to private firms with which the PEMP has signed preliminary agreements.

The budget allocated for the road maintenance has been more or less stable during the period 2011-2015. According to the PESR's Annual Program, the two sources of revenues for PESR are the excise tax on oil derivatives, which is transferred from the State Budget and motorway tolls. Nevertheless, the World Bank has stated that PESR admits that there is a gap, especially with regard to periodic maintenance, which varies between 15 and 20% of actual maintenance spending. The weakness of maintenance planning is that the maintenance budget is not divided as per Routine, Periodic and Emergency Works. The budget is allocated for the entire national road network (about 4500 km) and yearly budget between 2012 and 2016 is about 13 million euros per year. The routine and winter road maintenance unit rate is assessed approximately of 3300 euro/km based on the data provided for the contract with "Makedonija pat" in 2014. This amount is higher in comparison only from the average routine and winter road maintenance cost in Albania (2914 euro/km in 2012) and comparing with other countries in the region the unit road maintenance cost is very low (e.g. 9039 euro/km in Serbia in 2012).

The Road Asset Management System (RAMS) is still not operated by PESR in the planning and decision making process about maintenance works. The Road Asset Management System (RAMS) includes:

- providing equipment for surveying the road network conditions and collecting traffic and network data;
- use of software for assistance of preparation of a Strategic Maintenance Programme and also Programme for periodic maintenance and rehabilitation works, based on the network data from RAMS.

In the absence of a Road Asset Management System (RAMS) that would provide a complete view of the current network conditions, the PESR develops the five years and yearly programs primarily on

the basis of nationally set priorities, as outlined in the Government program and the National Transport Strategy and taking into account some recommendations from PESR's network supervision engineers based only on visual inspections of the network. The PESR has been working on introducing a RAMS since 2013, involving the collection of detailed road condition data, but this system is not yet completed. The PESR is also investing in the provision of equipment for pavement measurement to enable regular monitoring of the conditions of the state road network. The Road Network Evaluation Tool (RONET), developed in The World Bank, suggests that significantly higher maintenance expenditures will be necessary to improve the asset value of the road network (WB Report from July 2015).

3.2.2. Maintenance of rail infrastructure

The railway line of Corridor X is single track, electrified, mostly in medium condition, with two recently renewed sections Tabanovce- Kumanovo 11,6 km and Miravci-Smokvica 12,5 km which can be described as in very good condition.

The railway line of Corridor VIII is still not completely built and has two missing links on two borders, towards Albania (63 km from Kichevo to border crossing) and towards Bulgaria (approximately 58 km from Beljakovce to border crossing).

The railway infrastructure is managed by the Public Enterprise for Railway Infrastructure Macedonian Railways (PE MR-Infrastructure) as an Infrastructure Manager. The routine maintenance costs have been founded from the annual programme for financing of railway infrastructure and they are in compliance with an amount ensured in the national budget and approved by the Government. The PE MR-Infrastructure possesses a single modular software platform that uses decision support engines and prediction modelling for short to long-term planning of railway maintenance & renewal works. The problem in the implementation of this software is a lack of regular measurements of track conditions, e.g. the last measurement dates from 2013.

The SEETO Report of rail maintenance on TEN-T Core Network in Western Balkans from 2016 considers that the maintenance needs ranged between 16 and 21 million euro on a yearly basis from 2011 to 2016. However, the allocated maintenance budget in the same period has been 5 to 6 times lower than the assessed needs or from 1,79 to 3,58 million euro per year. The average of annual maintenance cost per kilometre is estimated at 5140 euro/km which is far less than the estimation in the REBIS project from 2015 of about 15000 euro/km.

3.2.3 Intermodal freight transport

The European Conference of Ministers of Transport defines Intermodal transport as: "The movement of goods in one and the same loading unit or vehicle which uses successively several modes of transport without handling of the goods themselves in changing modes". From that perspective, combined transport is "Intermodal transport, where the major part of the European journey is by rail, inland waterways or sea and any initial and/or final leg carried out by road are as short as possible" (EU Directive 92/106).

The Intermodality addresses the integration of modes at three levels: infrastructure and transport means, operations and the use of infrastructure (especially terminals), and services and regulation (from a modal-based to a mode-independent framework). The World Bank (WB) Logistics performance index (LPI, notes from 1=low to 5=high) ranks 160 countries on six dimensions of trade

including customs performance, infrastructure quality, and timeliness of shipments that have increasingly been recognized as important to development. The data used in the ranking comes from a survey of logistics professionals who are asked questions about the foreign countries in which they operate. The LPI in 2018 for Republic of Macedonia has a value of 2,47. The value of LPI is a summary of some sub indicators composed of: Customs index=2,21, Infrastructure index=2,58, International shipments index=2,45, Logistics competence=2,36, Tracking & tracing index=2,32 and Timeliness index=3,13. This result of LPI ranks the country at 81st place between 160 countries.

Table 25. Logistics Performance Index (LPI)

2007		2010		2012		2014		2016	
score	rank	score	rank	score	rank	score	rank	score	rank
2,43	90	2,77	73	2,56	99	2,50	117	2,51	106

Source: World Bank-United Nations report in preparation for the 2nd United Nations Conference on Landlocked Developing Countries (LLDCs), 2014

3.2.4 Management of the rail sector

The PE Macedonian Railways - Infrastructure (PE MR-Infrastructure) is the Infrastructure Manager starting as a separate institution from 2007, according to the Law of Railway System. The only railway operator in the country is the Joint Stock Company for Rail Transport (JSC MR-Transport), which resulted from division of the former railway company into two enterprises: Infrastructure and Transport. This company is still fully owned by the state. The Railway Regulatory Agency (RRA) was constituted in 2008.

Every year the PE MR-Infrastructure publishes the Network Statement, which encompasses a detailed overview of available railway infrastructure for potential customers and contains general rules, deadlines, processes and criteria related to the charging for track access and criteria for capacities allocation, as well as information about infrastructure access requirements. This document is made according to the Law of Railway System and according the Standards prescribed by Rail Net Europe (RNE). The data in this document is basic information for infrastructure access of rail operators. In the Network Statement it is noted that a private domestic or foreign legal person can perform railway transport of passengers and goods after accession of the Republic of Macedonia to the European Union, which means that the liberalisation of the rail operation market is not performed. The License for the performance of public railway transport is issued upon the request of a domestic or foreign legal person by the RRA. The access to the railway infrastructure for providing transport services can only be given to the railway enterprise, which except the license holds also a safety certificate for performing public railway transport. The safety certificate is provided by the Directorate for Safety of the Railway System which is a body within the Ministry of Transport and Communications. The railway operator should conclude an access contract with PE MR-Infrastructure for railway infrastructure access.

Track access charges are used for railway infrastructure financing. Actually, the track access charges are not sufficient to cover the real costs of maintenance and management of the railway infrastructure. They are defined in function of the direct costs resulting from the services use and on the basis of railway infrastructure network size and put on the costs level which will ensure efficient provision of services. The charges used to establish minimum package of services are defined taking into consideration number of travelled kilometres, train composition and other factors such as the speed, axle load and degree of using of the infrastructure or the time of its use. According to the

formula for calculation of track access charges in 2017, the unit cost per kilometre for freight trains with a mass of 600t-1200t traveling along electrified track is 3,2 euro/km and 3,0 euro/km going through non-electrified track. The unit cost of track access charges for passenger trains is 2,9 euro/km for trains which speed is no more than 100km/h and 3,5 euro/km for trains which speed surpasses 100 km/h. Comparing this unit costs of track access charges in 2012 and 2017 it is important to note that the unit cost for freight traffic decreases for 30% and for passenger trains the unit cost increases for 45%. The PE MR-Infrastructure had 1340 employees in 2014 or about 1,9 employees/km track. The revenues of PE MR-Infrastructure from track access charges of rail infrastructure in 2014 are in total 8,1 million euros: 4,3 million euros from freight trains and 3,8 million euros from passenger trains. The total revenue in 2014 is 17,7 million euros, or the revenues from usage of infrastructure represent 45,6% of the total yearly revenues and the rest comes from state budget or loans. The total expenses in 2014 are 25,5 million euros, or only the staff costs in 2014 are 9,0 million euros. The financial loss is 7,9 million euros in 2014.

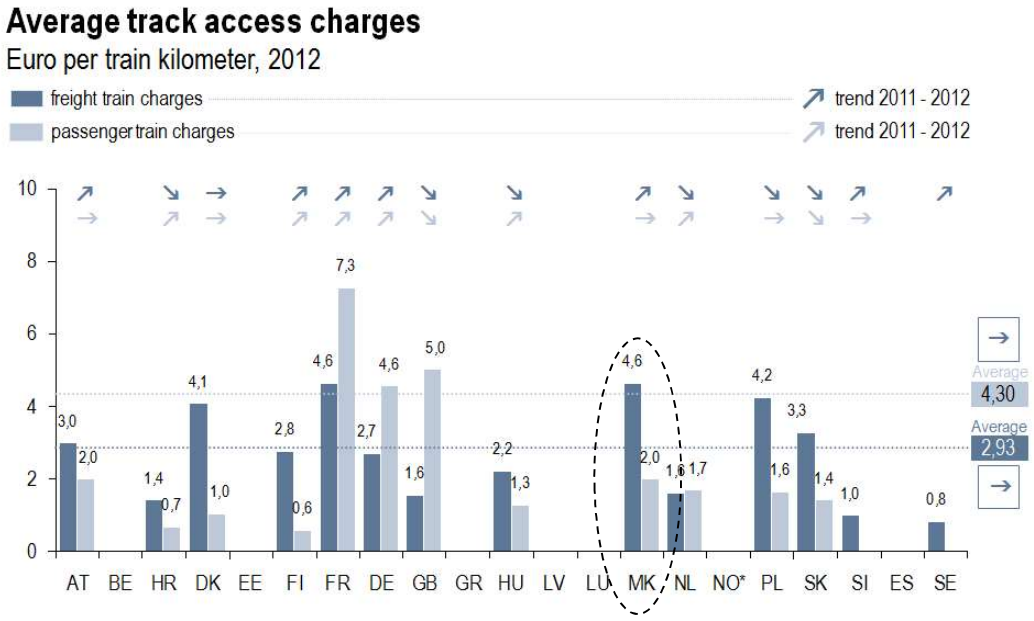


Figure 38. Average track access charges in different EU countries in 2012 (Source: Railway Regulatory Agency)

The JSC MR-Transport had 1174 employees in 2014 or about 1,7 employees/km track. The total revenues of JSC MR-Transport in 2015 are 26,8 million euros or there is a growth of 28% compared with 2014 (20,9 million euros in 2014). About 75% of the revenues occur from the sale of services. The total expenses in 2015 are 27,2 million euros and they are similar in 2014 about 28,2 million euros. The costs for salaries are 8,3 million euros in 2015. The financial loss in 2015 is 0,77 million euros, but it was 7,4 million euros in 2014.

Table 26. Employees, revenue, expense and financial loss in railway companies in the country for 2014

Railway Company	Employees	Revenues (million euros)	Expenses (million euros)	Financial loss (million euros)
PE MR - Infrastructure	1340	17,7	25,5	7,9
JSC MR-Transport	1174	20,9	28,2	7,4

Source: PE-MR-I Audit Financial Report for 2014 & JSC-MR-T Statistics for 2015

The railway transport is very sensitive to the problems with interruption of railway transport in Greece. The protests of port employees in Greece and the employees in Greek Railway Company encumber the transport of goods transported by rail and truck to and from the country. The JSC MR-Transport estimated that between 2011 and 2013 it had losses in finance of about 9,5 million euro, and the PE MR-Infrastructure in the same period considered financial loss of about 2,9 million euro directly caused by traffic blocking in the neighbouring country. The railway infrastructure in the country is connected to the neighbouring countries networks through four railway border stations:

Table 27. Railway border stations

Name of border station	Neighbouring State	Type of border	Observation
Tabanovce	Serbia		
Gevgelija	Greece	Schengen external border	
Kremenica	Greece		Out of function
Volkovo	Kosovo		

Source: PE MR-Transport Network Statement 2017

The plan for modernization and construction of railway infrastructure is based on the National Program and the three-year business plan of the PE MR-Infrastructure. The last National Railway Infrastructure Program 2014-2016 is published in the Official Gazette of RM n.29/2014. The realization of the projects proposed in this Program needs in total of 323,4 million euros, from which 49% should be allocated for construction and preparation of investment and technical documentation for the railway line of Corridor VIII, while for the Corridor X/X-d 51% of this amount should be allocated. The financial resource is planned to be received from IFI's with 51%, grants and loans from IPA and WB with 31%, from the state budget with 17% and 1% from own financial source.

According to the Law of the Railway System, the PE MR-Infrastructure also prepares an annual program for financing of maintenance works of the rail infrastructure. This program is adopted by the Government and the funds for realization of the annual program for railway infrastructure maintenance are provided in the budget of the MoTC. The costs of maintenance work in the period 2011-2013 are: 4,95 million euros in 2011, 3,28 million euros in 2012 and 5,11 million euros in 2013 or in average in this period the unit cost for maintenance is 6365 euros/km of open track.

The national technical standards and rulebooks related to railway infrastructure and traffic safety are almost the same as those applied in former Yugoslavian Railway Company. It is necessary to impose harmonization of the standards and rules with the EU directives and Technical Standards for Interoperability (TSI) in the railway transport system, because the EU-TSI in the rail transport are not implemented in the whole sector of the railway transport system. For example, the Regulation which establishes the technical specification for interoperability (TSI) relating to accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility, is not entirely implemented.

The domestic rail passenger transport is dominant in the total rail passenger transport with 99% of transported passengers in 2015. The supply of passenger trains in the internal (domestic) rail transport in 2017 is 31 pairs of passenger's trains/24h.
The number of passenger trains per day and per station is shown in the following table (Table 28).

Table 28. Number of pairs of passenger trains/24h in 2017

Stations		Number of pairs of passenger trains/24h
From	To	
Skopje	Kumanovo	5
Skopje	Kichevo	1
Skopje	Bitola	5
Skopje	Veles	14
Skopje	Kochani	1
Skopje	Gevgelija	3
TOTAL		29

Source : According to time table from JSC MR-Transport

The price of the passenger ticket depends on the travel distance. The JSC MR-Transport has different prices for one direction ticket and return ticket.

The average unit cost ticket per km in domestic passenger transport in 2017 is 1,92 Denars/km one direction ticket (0,031 euro/km) and 1,54 Denars/km return ticket (0,025 euro/km). The analysis of the time tables of JSC MR-Transport of passenger trains between Skopje and some stations in the rail network, shows that the commercial speed of the trains is between 45 km/h and 75km/h.

Table 29. Travel time and travel speed of passenger trains in the domestic rail transport in 2017

Stations		Distance (km)	Travel time		Travel speed	
From	To		Minimum time (min.)	Maximum time (min.)	Maximum speed (km/h)	Minimum speed (km/h)
Skopje	Kumanovo	36	31	44	70	49
Skopje	Tetovo	43	57	63	45	41
Skopje	Veles	51	41	58	75	53
Skopje	Kichevo	103	122	122	51	51
Skopje	Kochani	136	170	170	48	48
Skopje	Bitola	180	167	205	65	53
Skopje	Gevgelija	164	156	160	63	62

Source: Own calculation according to data from JSC MR-Transport

The presented travel time and commercial speed of passenger trains are not generally competitive with travel speed by cars especially in sections where there are highways. The average commercial speed of passenger trains in 2014 is 47,8 km/h.

The costs of freight transport depend on the type of carried goods, mass of goods and travel distances. The unit transport cost varies from 0,224 euros/t*km to 0,032 euros/t*km depending on the distance of transport and the quantity of goods for transportation. The JSC MR-Transport gives special discounts for a large amount of transport up to 20% of normal costs. The average commercial speed of freight trains is 12,4 km/h and the average trainload is 919,9 tons in 2014.

3.2.5 Legal/procedural provisions for cross-border road transport

The well-developed road network of the Republic of Macedonia is 14.410 km long and includes motorways, national roads, regional and local roads, including the two Pan-European Corridors Corridor VIII (east-west) and Corridor X (north-south). The largest share in the transport of goods and passengers is by road with national transport dominating largely over international and transit transport.

The quality of Macedonian roads is gradually reaching alignment with the service needs of national and local transport, and the continued development and upgrading of the highways is putting in place the necessary conditions for efficient international transport of passengers and goods. The *critical* component in international road transport is the border crossings, where the majority of bottlenecks persist or could emerge.

Republic of Macedonia has 15 official road border crossings namely: 3 with Republic of Bulgaria, 3 with Greece, 5 with Republic of Albania and 2 with Kosovo and 2 with Serbia. Furthermore, the Republic of Macedonia has 4 railway Border crossings: 2 with Greece (one rail border crossing, at Kremenica it is out of operation), 1 with Serbia and 1 with Kosovo, as well as 2 international air border crossings. Not being a member of the European Union is in itself a barrier to the free movement of persons and the free flow of goods via the border crossings, and can create blockages /delays at border crossings to meet police and customs obligations. Already in December 2003, with the "National Strategy for Integrated Border Management (IBM)", the Macedonian government endeavoured to facilitate border crossings and bring procedures in line with EU requirements and practices[11]. The Project was aimed at a participation in EU mechanisms such as CARDS, Schengen Agreement and the Stability Pact, establishing the basis for the adoption of the European and regional agreements and mechanisms for border management promotion and the signing of the international conventions.

The IBM strategy and Action Plan is in accordance with the Schengen catalogue of best practices and to international norms[12]. More in particular, the IBM strategy uses as principal guidelines:

- Strategic Guidelines for Integrated Border Management of the EU Council, Brussels, 21.11.2006;
- European Surveillance System for External Borders, Return and Readmission – Recommendations and Best Practices (updated version from 2009);
- EU Guidelines for Integrated Border Management in EC external cooperation, 2009;
- EU Guidelines for Integrated Border Management for Western Balkan, 2007;
- National Integrated Border Management Development Strategy and Action Plan from 2009;
- National Strategies of Ministries and institutions involved in IBM;
- Rules of Procedure of the National Coordination Centre for Border Management; and
- Experience from the work of the National Coordination Centre for Border Management and institutions involved in IBM.

[11] The National Integrated Border Management Action Plan passed on October 6, 2005 has been implemented as has the National Integrated Border Management Strategy adopted in 2003 by the Government of Republic of Macedonia. Efficient management and security of national borders is a top priority for Republic of Macedonia. These basic documents have been further fine-tuned in the "National Integrated Border Management Development Strategy 2015 – 2019" (Version 2, September 2014)

[12] Regulation (EC) No. 562/2006 of the European Parliament and the Council of 15.03.2006 for establishing the Community Code on the Rules Governing the Movement of Persons across Borders (Schengen Border Code)

The strategy also upholds the principles of equality and of human freedoms and rights while maintaining territorial integrity. A key objective of the strategy is to facilitate / speed up the movement of goods and therewith improve trade, but ensuring simultaneously the identification, the detection, the prevention, and when necessary the dealing with illegal and hostile cross border movements. The latter is becoming a key issue at certain border crossings with the continuing immigration problem.
The National Integrated Border Management Coordination Centre was set up as a higher level of integrated border management by Decision of the Government of the Republic of Macedonia from March 2007[13] to create a body with the aim of establishing efficient coordination, exchange of data and information using the Integrated Border Management Information Technology System.
The IBM introduced *strategic* border crossings that provide "one-stop" shops, open 24 hours, for all obligatory administrative and customs services, including veterinary services. With the IBM, Macedonia introduced 3 types of border crossings:

- *1st category = Strategic*: The largest border crossings with constructed facilities, high-standard infrastructure, material and technical assets and equipment, continuously open for international traffic and ensured presence of personnel from all state bodies that have authority at the state border. These border crossings can be crossed by the citizens of the Republic of Macedonia and the citizens of foreign countries with the necessary travel document and a visa (if one is required), and all types of commodities can be carried (taken into and out of the territory of the Republic of Macedonia) in accordance with customs and other regulations.
- *2nd category = Regional*: border crossings open for international traffic of persons, transport vehicles and goods, although possibly with certain limitations and/or bans. Only the presence of border police and customs has been provided at these border crossings, while the presence of other state bodies that perform activities at the border crossings are not guaranteed. The border can be crossed by the citizens of the Republic of Macedonia and the citizens of foreign countries with the necessary travel document and a visa (if one is required), but only during certain periods of the day while only certain types of commodities can be carried in accordance with customs and other regulations, combined with the crossing of the border only by certain types of transport vehicles.
- *3rd category = local:* border crossings, open for international traffic of persons, transport vehicles and goods, but with limitations because control can be performed only by the border police or only by customs, and there is no presence of other border authorities that perform activities at the border crossings. The border can be crossed by the citizens of the Republic of Macedonia and the citizens of a neighbouring foreign country in border traffic from certain area(s) and it is forbidden to carry (take into and out of the territory of the Republic of Macedonia) any type of commercial commodity in accordance with customs and other regulations. Furthermore, movement is allowed only on foot, with passenger motor vehicles, and the movement of all types of cargo vehicles is forbidden, including the movement (carrying) of live-stock or certain types of food which is also forbidden.

In practice, this means that international road transport is (relatively) efficient at the "strategic" border crossings, which are the border crossings at Tabanovce, Bogorodica, Deve Bair, Kafasan and Dolno Blace, where all services are present on a permanent basis. To a lesser extent, international

[13] Based on the Law on State Border Surveillance (Official Gazette" No. 71/06 and 66/07), and the Law on Border Control ("Official Gazette", No.171/2010)

road traffic, both passengers and goods transports, could also use the regional border crossings, which are the crossings at Delcevo, Novo Selo, Jazince, and Blato. But it should be noted that limitations in terms of availability of services exist which means that this could lead to extended waiting times. Other regional border crossings, more in particular Sveti Naum, Pelince and Stenje, are only for passenger traffic and not for commercial traffic.

In addition to being integrated into the one-stop service at the strategic border crossings, the efficiency of customs services, attached to the Ministry of Finances, has benefited from the Trade and Transport Facilitation in Southeast Europe (TTFSE) regional program[14], that created a framework to reduce transport costs, fight corruption, and help customs administrations gradually align their procedures with EU standards. Since most of the trade flows are bound to or from the EU and the majority of the countries involved fall within the TIR system, the working procedures of customs services are already built on a strong transit base.

The role of the Ministry of Transport and Communications remains limited within this environment and its contribution to maximising the efficiency of border crossings remains confined to, inter alia, adopting "Rules for standards and norms for planning and regulation of Border Crossing Points", specifying the standards in view of architectural arrangement of Border Crossing Points. Although this contribution seems limited, the importance should not be underestimated, because the architectural arrangements of border crossing points are undoubtedly one of the major components that define the functioning of the administrative and regulatory service point.

3.2.6 Conclusions of Actual Situation

Unavailability of adopted maintenance plans

- Maintenance plans for road and rail infrastructures should be updated for existing networks. The provision of particular data as appropriate measurements of infrastructure conditions, type of executed maintenance works in the past, traffic evolution, technical characteristics of infrastructure, climate data accompanied with usage of specific software is not yet practice during planning of maintenance and decision making process. The Road Asset Management System (RAMS) in the process of road maintenance management should be fully implemented by PE of State Roads. The PE MR-Infrastructure possesses a single modular software platform that uses decision support engines and prediction modelling for short to long-term planning of railway maintenance & renewal works. The problem in the implementation of this software is the lack of regular measurements of track conditions (the last measurement dates from 2013).

Operation & service aspects

- The vehicles fleet is old in both road and in railway transport. Although there is some improvement with the procurement of the new buses for the public transport in Skopje, the buses' fleet as well as the rail passenger cars in the bigger quantity are older than 10 years.

[14] Project supported by the World Bank, the EU, and bilateral partners, was set up in 1998 upon the request of the region's countries and the Southeast European Cooperative Initiative. The countries included in this program are Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Romania, Serbia, and the landlocked Moldova and Republic of Macedonia.

This situation is not sustainable and a progressive and well-planned fleet renewal in both transport modes is necessary.[15]

- The performances of regional and urban public transport supply are not satisfactory. The survey made by the Railway Regulatory Agency in 2012 shows that passengers are satisfied with the price of the ticket, but the other travel conditions are assessed as not suitable. The urban public transport is developed in several cities by buses, but it is particularly essential in Skopje regarding the demographical, economic and political importance of the capital. Many indicators, real-observed traffic conditions and air pollution require urban transport systems and services to be upgraded in an integrated way thus to ensure a balanced access of urban residents regardless of income, mode of travel, gender, or disability status. Sustainable urban transport planning needs to be improved for each bigger city in the country.

- Sustainable Urban Mobility Plan (SUMP) is needed, including data collection and surveys on urban and regional mobility, as well as the introduction of measures and targets for the reduction of emissions, especially of the Green House Effect (GHE) ones.
- The organisation and operation of intermodal transport is not sufficiently developed[16]. The transport services should be offered as mode independent door-to-door connections based upon a range of viable modal transport alternatives by making a new, efficient use of the transport system, reducing transport costs and allowing the generation of added value.
- Regulation which establishes the technical specification and needed facilities for accessibility of persons with disabilities and persons with reduced mobility, are not entirely implemented in the road and rail sector. The necessary regulations and standards for accessibility of disabled persons to road and rail transport, as well as provision for their free movement and travel with the necessary additional services and assistance should be further implemented.
- The national technical standards and rulebooks related to railway infrastructure and traffic safety are almost the same as those applied in the former Yugoslavian Railway Company. It is necessary to impose harmonization of the standards and rules with the EU directives and Technical Standards for Interoperability (TSI) in the railway transport system.
- The liberalization of train operations is not yet in practice, because the JSC MZ-Transport is the only railway operator at this moment for transport of passengers and freights. The lack of competition, the blockades of railway transport for access to the port of Thessaloniki, the civil works for renewal of track on one section on the Corridor 10, which causes delays in the railway traffic, contribute to the unfavourable financial operation of the JSC MZ-Transport. Measures should be undertaken to improve the conditions of rail transportation and services and to stimulate modal shift.
- Border passing time for commercial vehicles at international border crossings is observed through a survey made on two road border crossing on Corridor X. The very important time on the border crossing Bogorodica (border with Greece) is noted on entrance in the country for heavy truck vehicles (HTV). The road infrastructure capacities and the customs facilities should be improved in order to be sufficient for this type of vehicles.[17]

[15] Buses: 81.2% older than 10 years, Rail stock: 70% of locomotives, motor trains are older than 40 years and passenger wagons, 70% older than 30 years.

[16] Actual share of intermodal transport: 0.916% of the total carried goods of 38.08 million tonnes (domestic, international and transit).

[17] Waiting time of trucks on Bogorodica to enter Macedonia is 64 min and the waiting exit time of trucks on Tabanovce is 112min in average, as per Custom administration of RM own survey.

Until now, the projects identification for the Corridor network is done on the basis of the results from the project for "Support in identification, assessment and selection of eligible, projects for IPA Regional Development component part Transport" financed by IPA 2007-2013 and completed in august 2011. The objective of drafting a Project pipeline for sector Transport was to contribute to the effective management and implementation of OPRD (Operational Programme for Regional Development 2007-2013) and to provide assistance to develop the capacities of the MoTC of the Republic of Macedonia for development of sound and sustainable project pipelines, in the railway and roads sectors. The Project pipeline was a basis for the adoption of the Single project pipeline for the Transport sector by the Government of the Republic of Macedonia in December 2015. However, the methodology and model developed by the project in 2011 needs an update, to extend the scope, criteria, include the financial feasibility and to allow to be used under multi-donor financing. The SPP was also considered at the SWG for transport in August 2018 and after revision was adopted on the NIC and the Government of Republic of Macedonia on 27.11.2018.

- The regularity for mobility surveys is not yet introduced on a national level. The mobility surveys were made in the City of Skopje every ten years as a part of required documents for physical planning. Nevertheless, these mobility surveys were not carried out according to same standard methodology. Several transport models were prepared in the last years for traffic analysis and forecast and used in different infrastructure projects. The particular data and statistics used in these models come from general data published by the State Statistical Office, Public Enterprises or from regional or international transport surveys.
- The intelligent transport system (ITS) aims to provide innovative services relating to different modes of transport and traffic management and enable various users to be better informed and make safer, more coordinated, and cleverer use of the transport networks. The development of strategy and action plan for their realisation should be necessary in the next period.

3.3. Proposed Measures (legislation, O&M)

General Objective 1: Strengthen EU integration and promote regional cooperation

Specific Objective 1.2: Reduce border-crossing times and procedures

Western Balkan countries are recognising that the long delays at borders/common crossing points – in road and rail – within the region caused significant economic losses to transport operators and thus, the need to enhance the conditions to improve border/common crossing points' operations. MoTC will be proactive with measures (and actions) for eliminating bottlenecks, which are under its responsibility. In all other cases MoTC will actively participate in coordination mechanisms and initiatives, created for reduction of border-crossing times and procedures.

Specific Objective 1.3: Finalise the alignment of the Macedonian transport legislation to the EU acquis

Republic of Macedonia is ambitious to become a member of the European Union. NPAA is a key document for the EU integration process reflecting the dynamics of harmonisation of the national legislation with the European law as well as the adjustment of national institutions to the European administrative structures. Among other NPAA[18] (*Annexes of this programme contains an overview of national legal acts subject to harmonisation with EU legislation, list of relevant EU measures to be transposed, terms for adoption, responsible institutions and the procedure and status for adopting*) defines a detailed plan and timescale for approximation of the national legislation with the EU *Acquis communautaire*. The finding of the EC Annual Progress Reports on the Republic of Macedonia is a main indicator for the progress achieved.

The Treaty establishing the transport community (TeTC) is to ensure alignment of the region's transport sector with the EUs serving as an affirmation of the EU commitment to the enlargement policy. The Treaty implies the obligation of the contracting parties to apply the EU acquis regarding the transport sectors (excluding the air transport), with emphasis on acquis concerning social, environmental and public procurement issues, as well as their liability to apply standards with respect to traffic management and safety, along with other technical standards. This further means direct application of EU rules governing the transport sector and related issues in Republic of Macedonia, which are contained within regulations, directives and decisions by the EU explicitly listed in Annex I of this the Treaty.

General Objective 2: Contribute to the improvement of the economic sustainability at the national level

Specific Objective: 2.1: To improve the accessibility and quality of the National transport-infrastructure network and transport services

Transportation Asset Management is a strategic and systematic process of operating, maintaining, and improving physical assets. The basic principles of asset management include: (i) a systematic

[18] The National Programme for Adoption of the Acquis Communautaire **(**NPAA**)** is a comprehensive long-term document that defines the dynamic of the adoption of the Acquis Communautaire, strategic guidelines, policies, reforms, structures, resources and deadlines to be realised by the Republic of Macedonia to fulfil the requirements for European Union membership. http://sep.gov.mk/en/content/?id=13

evaluation of asset needs and available resources, (ii) consideration of an entire asset lifecycle, (iii) combining engineering and economic principles, (iv) data-driven decisions and investments, and (v) efficiency and cost-effectiveness as primary outcomes.

In a short-term PE of State Roads needs to intensify its efforts for use of the Road Asset Management System (RAMS). Methodology, software and IT data based for collecting and analysing particular data (measurements of infrastructure conditions, type of executed maintenance works over the past, traffic evolution, technical characteristics of infrastructure, climate data accompanied) needs to be developed to facilitate planning of asset management and decision-making process. Similar measure is envisaged also for the PE MR – Infrastructure as a railways infrastructure manager. Updated maintenance plans for road and rail infrastructures need to be supported with adequate financial support.

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

In 2011, in the framework of the project "Identification, evaluation and selection of projects eligible for financing", a list of projects and an action plan for implementation of the road and railway infrastructure along the SEETO comprehensive network in the Republic of Macedonia were developed. Under this project, a methodology based on a multi-criterial analysis for identifying and prioritizing the needs for improving the road and railway infrastructure was used with dual approach as follows: (i) classic approach to multi-criteria analysis in order to identify projects and; (ii) comparative, systematic review of each project that is available in order to assess its consistency with the requirements of the IPA instrument. Now, this methodology and software needs update, to extent the scope, criteria, include the financial feasibility and to allow to be used under multi-donor financing.

The Public-private partnership (PPP) as proven instrument can be considered as financial source, for attracting additional financial resources for high priority investments in transport, and increasing the investment attractiveness of the Country. The PPP approach can induce indirect effects related to improvements in public sector management and the transport sector could benefit from the addition of new operators and markets.

Specific Objective 2.3: To improve the administrative and operational capacity of governance structures

Recent institutional reforms have progressed in a satisfactory manner and are in accordance to the Acquis requirements, having created an institutional framework that is approaching the international best practices, with a central authority for the transport sector that focuses on the governance of the transport sector and control, and regulation outsourced to independent authorities and agencies responsible for the safety of transport.

However, further efforts that focus on the operational and administrative capacity on a central level, as well as on the bodies responsible for effective implementation of laws and regulations, are needed. The Government is committed to address with the same dynamism all the remaining institutional inefficiencies and put in place an administration that is efficient, flexible, well structured, and fully adapted to the needs of a constantly changing transport sector.

To complete the implementation of the *acquis*, following issues will be addressed in the short and medium-term future: (i) strengthening of transport safety management; (ii) implementing international best practices when addressing the concrete needs and priorities of the country's transport system; (iii) improving coordination where crosscutting challenges exists; (iv) to introduce monitoring mechanism of continued follow-up of the implementation of the National Transport Strategy (NTS) and (vi) increase the capacities of a dedicated unit with tasks explained under the Chapter 4, Monitoring and evaluation.

Aiming to improve the strategic planning and monitoring of the Strategy implementation it is needed to develop and introduce a system/coordination mechanism and increase human capacities for transport statistics and information collection, analysis, exchange of information, for planning management and forecasting purposes.

General objective 3: To introduce green mobility and logistic focused to environmental performance of the Transport sector

Specific objective 3.1: To develop and improve environmentally friendly and low carbon transport systems

Environmentally friendly and low-carbon transport measures, such as avoiding trips, reducing demand, shift to low-carbon modes and improving vehicle efficiency can help reducing traffic and parking congestion, service cost savings, consumer savings and affordability, improved mobility options for non-drivers (and therefore reduced chauffeuring burdens for motorists), and improved public health, in addition to their key purpose for pollution emission reductions.

Air quality is major issue to which low-carbon transport can make a positive contribution. However, many transportation emission reduction measures (public transport attractiveness, park and ride opportunity, avoid congestions, increase access and mobility, noise pollution mitigation) also reduce costs by improving affordable travel options including walking, cycling, ridesharing and public transit, and by creating more compact communities with shorter travel distance

In addition, specific cross-sectoral measures will facilitate the introduction and use of eco-friendly vehicles, equipment, techniques and technologies such as biofuel and other forms of clean energy that will not damage the environment; electric and hybrid vehicles, etc.

Specific objective 3.2: To stimulate modal shift

A key precondition for developing modal shift from road to rail freight transport is an existence of reliable and safe infrastructure and encouraging use of train transportation. The track access is analysed under the Chapter 3.2.4. Modal shift is related also with climate change and it is important to reduce CO2 emissions. One way in doing this is by opting for the train in transporting freight and passengers, as CO2 emission of this transport mode is ten times less compared to transport over a road, according to figures of the European Environment Agency.

In urban areas, the modal shift will be stimulated after the development and implementation of the SUMPs – Sustainable Urban Mobility Plan for the main cities (requirement for cities > 25,000 hab). Promotion of public transport and services and changes in the modal split from private cars to public transport should be strengthened. It is expected that, when properly implemented, these measures will lead to reduction of needs for a private car in urban areas. Improving urban planning could also promote non –motorized modes (pedestrians and cyclists). Close attention should be done to

vulnerable persons and people with reduced mobility in order to reduce social exclusion. For instance, the Skopje SUMP needs to ensure that "hard to reach" groups (disabled people, young people and the elderly, people with low literacy levels, etc…) are part of the stakeholder groups for the project. A specific measure is proposed in this respect.

Specific objective 3.3: Increase the importance of intermodal and multimodal transport in national transport policy

Analysis shows that the intermodal transport in Macedonia is underdeveloped in comparison with EU countries. The level of participation of intermodal transport in total freight transport, infrastructure facilities development, legislation, regulations and standards are lagging behind. The Government of Republic of Macedonia is ambitious to launch intermodal systems that facilitate and optimize the transfer between modes. Along with the infrastructure development, mentioned under the Chapter 2.3, improving of transport intermodality could be made via establishment of a legal and regulatory framework, strengthening professionals training and education about the benefits of modal interconnections and launching public campaigns to changes of individual behaviour. Other soft measures are access to information regarding the routes and integration of ticketing and luggage services

General objective 4: Establishment of reliable and safe transport system

Specific objective 4.1: Improve transportation safety

The Government will continue to implement legislation, regulations and safety standards into practice to improve the safety across all transport modes with orientated towards EU best practices.

In railway transport, efforts are planned for improving rail safety standards ensuring that rolling stocks are put into service only if it is designed and constructed following RIV and RIC (international regulations).

Macedonian civil aviation works towards the full application of the European Community's aviation law aiming to have open access to the enlarged European single aviation market. The benefit from full membership in Joint Aviation Authorities[19] (JAA) is, an ongoing-specialised training for the obligatory implementation of common high safety, security, environmental and other standards for the country authorities. Strengthening the national aviation authorities by the European Aviation Safety Agency (EASA) is useful as it further contributes to pursue the highest safety standards for civil aviation.

Nevertheless, that the lake passenger transport consists of only 0.1 % of the total volume, and its purpose is tourism and recreation, strengthening operation safety is an important task and the operational capacity of the Captaincy-Ohrid, within the MoTC, as responsible for supervising the implementation of relevant safety laws and rules should be further increased.

Specific objective 4.2: Improvement of road traffic and road infrastructure safety (incl. Urban transport safety)

High number of fatal and serious road traffic injuries is a major problem causing unacceptable human suffering and significant economic loss. Updating the Road safety strategy and action plan would be

[19] now operating under the name JAA-TO

an effective tool for better road safety management. The government commits to adopting aspirational targets for halving the number of fatal and serious road traffic injuries from 2020 to 2030, in line with the fatality and injury targets applied in the EU and at the UN level, and adopts the necessary complementary measures to reach these targets.

Considering the importance of guaranteeing the safety of road and transport, most policy, operation and services safety measures (i.e. safety inspections and audits; set up a coordination mechanism between police forces and justice ensuring the full implementation and strict enforcement of road safety legislation, updating road safety strategies and formulation of an action plans, improving the quality of systematic and consolidated data collection on road traffic deaths and serious road injuries in line with existing EU standards and definitions -CARE data model, and increased safety awareness) are to be realized in the short to mid-term future, with the firm commitment for the measures and initiatives being operational in the next four years.

Specific objective 4.3: To introduce IT technologies and Implementing Intelligent Transport Systems (ITS) in the transport sector

It's obvious that ITS is still not acknowledged as a strategic, comprehensive and high-priority area of transport strategy and component of overall transport system, but only as secondary activity, the sum of IT or similar projects, mostly dedicated to Public Enterprises (Roads, Railway or City Traffic). ITS legislation transposition and ITS strategy and action plan elaboration have to be indicated as one of the short-term actions of the NTS with a special attention to C-ITS, that is targeted to offer services within the EU in 2019. Issue is considered as well under chapter 2.3, *proposed measures*.

Transport sector legislation and standards

N	SO	Mode	Regulations	Priority	Realization period
RM[20] 1	1.3	All modes	To mobilise sufficient resources (human, institutional & fiscal) for the implementation of the Transport Community Treaty	Short to mid term	2 to 6 years
RM2	1.3	All modes	Harmonisation and implementation of the Transport Community Treaty/TEN-T Regulations (ITS, combined/intermodal transport, state aid and market liberalization, social and safety standards, transport of dangerous goods –ARD legal framework)	Short to long term	1 to 12 years
RM3	1.3	Rail	Prepare the new railway code in line with the respective EU Directives, especially EU Directive 2012/34/EU - European railway area (recast)	Short to mid term	2 to 6 years
RM4	2.3	Air	Support to the Air traffic management (ATM) in order to cope with sustained air traffic growth and operations under the safest, most cost- and flight-efficient and environmentally friendly conditions (Single European Sky framework)	Short to mid term	2 to 6 years
RM5	1.3	All modes	Modify national transport infrastructure standards regarding the environmental sustainability and climate changes	Short to mid term	2 to 6 years

[20] Regulatory measures (RM)

RM6	1.3	All modes	Full compliance with safety standards for infrastructure, vehicles, and equipment aligned with EU and international standards and obligations	Short to mid term	2 to 6 years
RM 7	1.3	All modes	Implementing EU standards for transportation of person with reduced mobility especially concerning the usage of public transport and public space	Short to mid term	2 to 6 years

Management, operation and services measures

N	SO	Mode	Operation and services	Priority	Realization period
OSM[21] 1	1.2	Rail/borders	Identify and remove bottlenecks at the railway border crossings (operations)	Mid to long term	6 to 12 years
OSM 2	1.2	Road/rail	Optimize the administrative/operational procedures and costs related to checks and controls at border crossing points (freight), in line with "Schengen Borders Code"	Short to mid term	2 to 6 years
OSM 3	1.3	All modes	Strengthening MoTC/ Sector for EI competences to monitor the implementation of the National Transport Strategy	Short to mid term	2 to 6 years
OSM 4	2.1	All modes	Strengthening the administrative capacity and financial sustainability of the asset management of all transport systems (management procedures, practices and financial feasibility)	Short to Long term	1 to 12 years
OSM 5	2.1	Road	Strengthening the implementation of the asset management procedures of the national, regional and local road transport systems (bridge and pavement analyses and formulation of the follow-up measures: upgrading, preserving and maintaining infrastructure over the lifecycle)	Short to Long term	1 to 12 years
OSM 6	2.1	Rail	Strengthen the implementation of railway asset management system (RIMS) (incl. track maintenance planning and maintenance works)	Short to Long term	1 to 12 years
OSM 7	2.2	All modes	Strengthen the knowledge and capacities for use of public private partnerships for infrastructure development and public transport services	Short to mid term	2 to 6 years
OSM 8	2.2	All modes	Update the methodology and software for prioritization of infrastructure projects (Single project pipeline for Transport sector)	Short term	2 years
OSM 9	2.2	Rail	Liberalization of the market for railway transport operation	Short to mid term	2 to 6 years
OSM 10	2.3	All modes	Develop and operationalize a system/coordination mechanism and increase human capacities for transport statistics and information collection, analysis, exchange of information, for planning management and forecasting purposes	Short to mid term	2 to 6 years

[21] Operation and services measure (OSM)

OSM 11	2.3.	All modes	To prepare the Ministry of Transport and Communications to act as "Contracting Authority" vis-a-vis IPA and Structural Funds.	Short to Middle Term	1-3 years
OSM 12	2.3	Road	Improving road maintenance capacities and organization for national network	Short to mid term	2 to 6 years
OSM 13	2.3	Road & Rail	Training and education for implementing road and railway asset management	Short to mid term	2 to 6 years
OSM 14	2.3	All modes	Institutional strengthening and capacity building on central level (MoTC as a central transport policy making institution)	Short to mid term	2 to 6 years
OSM 15	2.3/3.3	Roads & urban	Strengthening the capacity of the Traffic Management Units (central/local level) in order to enhance management accountability for the operations of the traffic management systems	Short to mid term	2 to 6 years
OSM 16	2.3/3.3	Intermodal	Enhance institutional capacity for initiating and implementing intermodal transport	Short to Long term	1 to 12 years
OSM 17	2.3	All modes	Support studies, training and education on transportation safety	Short to Long term	1 to 12 years
OSM 18	3.2	Urban	Development of Sustainable Urban mobility plans (SUMPs) for the main cities, considering "hard to reach[22]" groups within the frame of the SUMPs interventions	Short to mid term	2 to 6 years
OSM 19	3.1/3.2	Urban	Stimulate the use of environment friendly vehicles	Short to Long term	1 to 12 years
OSM 20	3.2	Urban	Improve urban public transport attractiveness (operation/service)	Short to mid term	2 to 6 years
OSM 21	3.2	Urban	Reduce usage of private cars and encourage use of public transport and non-motorized modes in densely populated areas (singe ticketing, etc.)	Short to Long term	1 to 12 years
OSM 22	4.1	Rail	Implementing rail safety legislation, regulations and standards into practice	Short to Long term	1 to 12 years
OSM 23	4.1	Air	Continue efforts towards the full application of the European Community's aviation legislation aiming to have open access to the enlarged European single aviation market	Short to Long term	1 to 12 years
OSM 24	4.1	Water	Strengthen water/lake transport operation safety	Short to mid term	2 to 6 years
OSM 25	4.2	Road	Implement Road Safety Inspections for existing key road infrastructure and a mandatory Road Safety Audits for all new roads (not only SEETO)	Short to Long term	1 to 12 years
OSM 26	4.2	Road	Improve the quality of systematic and consolidated data collection on road traffic deaths and serious road injuries in line with existing EU standards and definitions (CARE data model)	Short to mid term	2 to 6 years
OSM 27	4.2	Road	Introduce road safety audit training accreditation courses	Mid term	6 years
OSM 28	4.2	Road	Increase inspection capacities (human capacities, equipment/resources available,	Short to Long term	1 to 12 years

[22] Disabled people, young people and the elderly, people with low literacy levels, etc

			increase the frequency of vehicle road checks etc.)		
OSM 29	4.2	Urban	Improve urban traffic management system (incl. actions: traffic lights, pedestrian paths, cameras)	Short to Long term	1 to 12 years
OSM 30	4.3	All modes	Facilitate and support introduction of Intelligent Transport Systems and services		

PART 4: The Strategy

4.1. Overview of the Strategy

The intervention logic may be "faithful" to the documents establishing the policy as the National Transport strategy 2018-2030 is. In this case, the expected effects are inferred from the stated objectives in the key official transport sector national and international documents.

The overall objective of the National Transport Strategy is **to develop a harmonised 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**.

General objectives

N.	General Objectives	Targets
GO1	**Strengthen EU integration and promote regional cooperation** *International dimension of all transport modes*	**Completion of SEETO Core and Comprehensive *Road and Rail* Network passing through the national territory (defined as *TEN-T Comprehensive Network in the South East Europe- SEETO/TeTC*)**
GO2	**Contribute to the improvement of the economic sustainability at the national level** *National dimension of all transport modes & urban transport*	**Improvement of country ranking in World bank Logistics performance index (in 2018, MK country rank is 81 out of 160)**
GO3	**To introduce green mobility and logistic focused to environmental performance of the Transport sector** *all transport modes & urban transport*	Reduce the Greenhouse transport emissions by 5% in 2025 and 7% in 2030
GO4	**Establishment of reliable and safe transport system** *all transport modes & urban transport*	Reduce of the death toll on the roads by 50% until 2030

The Specific objectives defined under each General objective are:

N.	Specific Objective
GO1	*1.1.* **To complete the SEETO/TeTC Core and Comprehensive Network passing through the national territory and upgrade the standards of the existing road and rail infrastructure sections to the modern technical and operational standards** (road and rail); *Infrastructure function (IF)*
	1.2. **Reduce border crossing times and procedures** (all modes); *Operations and Services function (O&S)*
	1.3. **Finalise the alignment of the Macedonian transport legislation to the EU acquis** (all modes)

N.	Specific Objective
	Regulatory function (RF)
GO2	**2.1. To improve the accessibility and quality of the national transport infrastructure and transport services** (all modes) *Infrastructure function (IF)*
	2.2. To ensure the socio-economic and financial feasibility of transport development projects & initiatives (all modes); *Operations and Services function (O&S)*
	2.3. To improve the administrative and operational capacity of governance structures (all modes) *Operations and Services function (O&S)*
GO3	**3.1. To develop and improve environmentally friendly and low carbon transport systems** (all modes) *Crosscutting*
	3.2. To stimulate modal shift (all modes) *Crosscutting*
	3.3. Increase the importance of intermodal and multimodal transport in national transport policy *Crosscutting*
GO4	**4.1 Improve transportation safety (all modes, except roads)** *Crosscutting*
	4.2 Improvement of road traffic and road infrastructure safety (incl. Urban transport safety) *Crosscutting*
	4.3 To introduce IT technologies and Implementing Intelligent Transport Systems (ITS) in the transport sector (all modes); *Crosscutting*

4.2. Monitoring and evaluation

Monitoring modality

The purpose of this Chapter is to outline the monitoring and evaluation modalities of the implementation of Transport sector policy framework[23] in Macedonia, defined under the National Transport Strategy 2018-2030 (NTS) in line with the requirements of the sector approach[24] as defined by the European Commission. The Chapter also presents the monitoring (performance/outcome) indicators to be used as a tool to assess the progress towards achieving the National Transport Strategy objectives.

In a close cooperation with all national transport stakeholders, the **Ministry of Transport and Communication** is responsible to monitor the progress of implementation the National Transport Strategy (NTS) towards *developing a harmonised transport sector that is internationally compatible*

[23]TSPCF is to replace the earlier "Programme Based Approach" co-ordination framework.

[24] The IPA II regulation (No 231/2014) and the IPA II Framework Agreement between the EU and Macedonia (Official Journal of the Republic of Macedonia No. 99 from 16.06.2015) place high importance on the co-ordination of policies, strategies and funding within the sectors identified with the indicative Country Strategy paper. IPA II clearly focuses on "programme-based approach" and "sector wide approach", the objective of which is to provide a multi-annual, strategic framework for the programming of the EU assistance in line with the country priorities. This is a marked change from the predominantly project-based programming of earlier years.

and integrated into the TEN-T system stimulating the economic and social development of the country, preserves the environment and secures the needs of future generations (NTS Overall objective).

This requires good national systems to collect information and provide statistics, in coordination with all partners to monitor progress, evaluate impact, ensure sound achievements, transparent reporting and public accessibility to information.

The monitoring and self-evaluation functions will be held under a simplified co-ordination structure. Without changing the overall mandate, the number of operational mechanisms is kept to a minimum. Instead of having several layers of bodies with similar and even "mirroring" mandates, it proposes fewer levels with a flexible participation of senior vs. medium-level managers, as the agenda requires.

As stated under the General provision chapter of the Rules and procedures document, the Sector **Working Group for Transport[25] (SWGT)** *is an inter-ministerial co-operation forum with a mandate for implementing tasks related to the* ***formulation and implementation of national sector policies****, including those relevant for EU integration as well as coordination of* ***donor assistance for the sector*** *in general and the European Union's IPA II programme in particular*.

The current tasks of the SWGT are to: (i) revise and amend the Single Project Pipeline; (ii) discuss the multi-annual and annual strategic planning documents relevant to the programming in the transport sector in the context of IPA II; (iii) ensure transparency and broad participation of relevant partners and stakeholders through all stages of the planning process, (iv) identify possible disadvantages, problems and risks in the planning of programmes and projects, (v) propose measures to be taken and Improve cooperation and exchange of working experiences; (vi) prepare recommendations and opinions in accordance with IPA II, as well (vii) the utilization of donor assistance is in line with the relevant strategic policies of the Government of Republic of Macedonia.

Following up the implementation of the NTS, the key national policy document, SWGT will ensure coordination of the IPA interventions with the National Transport Policy General and Specific objectives for effective management of the reform processes and the resources within a single framework.

National Transport Strategy monitoring of implementation, upon adoption of the Strategy, will be under the umbrella of the **MoTC's Department for European Union – the Unit for negotiations and integration.** No doubt, the Unit for negotiations and integration already gathered some experience and lessons learned being the coordinator of the Working group, composed by a Decision of the Minister for monitoring the National Transport strategy 2007-2017. Even more, the same unit is in charge for technical support for the accession negotiation process, acting as Secretariat for working groups within the National Programme for Adoption of the Acquis (NPAA)[26]. It is a Secretariat for the process of the Treaty establishing transport community and secretariat for the stabilisation and association process. The Unit for negotiations and integration is also in charge as a MoTC contact point for number of strategic documents preparation: (i) EC progress report; (ii) EC technical assistance instruments (TAIEX for example) and (iii) other reports and documents related to EU integration.

[25] Rules of Procedure regulate the operation of the Sector Working Group (SWG) for the Sector "transport" of the Government of the Republic of Macedonia as constituted by on 65th Government session held on 31.03.2015 and amended on 78th Government session held on 08.06.2015.

[26] Chapters 14, 21 and others relatedto the Transport sector chapters

Considering the national scope of the strategy, other units under the department (Sector for EU), i.e. the **IPA monitoring and programming units and especially the Unit for other foreign investments will contribute** to the monitoring of the implementation of the strategy process. In this respect, the internal coordination is very crucial.

The Unit for negotiations and integration in a close coordination with the SWGT, will ensure the provision of technical, administrative, communication and coordination services to all relevant structures, including collection and analysis of the information and data, monitoring of progress and preparation of the Annual reports. Based on the Annual report, the SWGT will assess the overall situation and progress made in the implementation of the Strategy.

To avoid workload, and to support the Unit for negotiations and integration to effectively execute its functions related to the NTS monitoring, regarding information collection, analysis and assessment of the progress against the indicators, a technical assistance project is planned. The scope of work of this TA project will include:

- necessary data and evidence collection for assessing the achievements against indicators;
- preparation of an independent opinion on the achievements against targets/indicators set for each year, covered by the NTS and
- establish a permanent internal monitoring IT application tool for the Strategy monitoring.
- preparation of the unit for negotiation and integration for the monitoring of the NTS (building its administrative capacity).

Aiming to facilitate formulation and implementation of the sector policy in general, and to support the monitoring of the NTS, under the Specific objective 1.3, "*To improve the administrative and operational capacity of governance structures"*, a measure is formulated, namely "Develop and operationalize an IT-based "Sector Information System" for transport statistics, information collection, exchange and management, and for planning and forecasting". Specific action is foreseen to be taken in a short-term.

Statistical information needed to assess NTS implementation progress against the **monitoring indicators** are made available by the State Statistic office database for use and where such data is not available, information should be collect from all national transport stakeholders.

The day-to-day monitoring of the implementation of this Strategy will be a continuous process and a part of the implementing partner's responsibilities.,

Based on information and data collected and analysis held the **Unit of the negotiation and integration will elaborate official annual regular progress reports** (to be updated regularly by mid-year) and final reports. Based on the Annual report, the SWGT will assess the overall situation and progress made in the implementation of the Strategy. The Annual monitoring reports, approved by the SWGT are going to be presented to the Government. Each report will provide an accurate account of implementation of the action, difficulties encountered, changes introduced, as well as the progress against objectives as measured by corresponding indicators, using the list of performance indicators as a reference.

Monitoring arrangements are expected to positively affect the achievement of the Strategy's objectives and contribute to positive results. The reports will capture progress against the policy performance.

Strategy evaluation

NTS mid-term review is foreseen at the end of 2024. A final evaluation is planned to be carried out at the end of 2030. An interim evaluation of the NTS to analyse the progress, the management of resources and the quality of its implementation, is planned. It will assess the success of the measures undertaken, the resources invested and the extent to which the expected effects have been achieved. Data from various sources, including IPA II and WBIF funded projects, shall be used for this purpose.

Indicators to assess the outcome of the National Transport Strategy.

Indicators are important tools to (i) measure the degree of implementation of the policies identified, and to (ii) evaluate the expected impact of the measures proposed. In general *outcome or performance indicators* are

- Quantifiable metrics that provide a method for measuring the quality of intervention
- facilitate the understanding of strengths and support continuous improvement
- help in monitoring progress and assist active counteraction against undesirable developments
- Method for working out the causes and effects that directly and indirect influence the achievement of goals and corresponding results.

Best practice indicates that the list of indicators cannot be exhaustive: for each mode, a set of indicators is proposed, considering the mode's strategic priorities and goals, expected results, data availability, sustainability, etc.

To choose the monitoring indicators, it is necessary to ensure that (i) they can be easily evaluated, and (ii) they are directly linked to the National Transport Strategy. In addition, and according to the international best practices, the list of indicators proposed bellow cannot be exhaustive, a set of indicators could be amended by the parties responsible to monitor or evaluate the strategy implementation, considering the transport mode's strategic priorities and objectives, expected results, data availability, sustainability targets, etc.

With the statistical information made available by the Macedonian Statistical office, the Ministry of transport and communication and other transport involved stakeholders, the following set of indicators are proposed to monitor the implementation of the National Transport Strategy 2018-2030 – using quantitative/ qualitative figures as a baseline.

With the data available so far, only the indicators defined bellow can be measured. However, in the medium-run it is highly recommended to extend this list.

Ones more, when detailed statistical information comes at hand, the list for the case of Republic of Macedonia (per mode and for the transport sector as a whole) more comprehensive list of indicators would be constituted.

Table 37 – Monitoring indicators for the implementation of the National Transport Strategy

	Performance Indicator[27]	Description	source of information & verification	Baseline data, year	Target 2030	unit of measure/ *Aggregation Method*	periodically & type: annual or cumulative
1	**1.1.a Total length of constructed / reconstructed roads within SEETO (Transport Community Treaty) Core and Comprehensive Road Network at the end of the respective year**	The length of constructed/reconstructed roads within SEETO (Transport Community Treaty) Core and Comprehensive Road Network is calculated on the basis of the number of Km that are constructed/reconstructed and put into operation after adoption of the NTS 2018-2030 *quantitative*	Public enterprise for State roads	0 (2017)	360,5 km new motorway and express road constructed/reconstructed (28+100.5+66+122.5+43.5)[28]	Km	Yearly/cumulatively calculating for each following year
2	**1.1.b Total length of railway line constructed/reconstructed within SEETO (Transport Community Treaty) Core and Comprehensive Railway Network at the end of the respective year**	Length of railway constructed/reconstructed according EU standards where there is no operational railway infrastructure *quantitative*	Public enterprise Macedonian Railways Infrastructure (Network statement)	0 (2017)	168 km new railway constructed (Xd=16km+VIII=63+89km)[29]	Km	Yearly/ cumulatively calculating for each following year

[27] PERFORMANCE INDICATORS: (i) – quantifiable metrics that provide a method for measuring the quality of operation; (ii) facilitate the understanding of strengths and support continuous improvement; (iii) – help in monitoring progress and assist active counteraction against undesirable developments; (iv) method for working out the causes and effects that directly and indirect influence the achievement of SOs targets.

[28] Calculations aiming to set the target/roads (2030) made by of MoTC, Department for European Union were based on the information bellow (provided by PE State Roads in September 2018): Corridor X, new motorway - missing link: Demir Kapija- Smokvica, total **28 km;** Corridor VIII, new motorway - missing links: toward Albania (57 km from Kichevo to Ohrid, under construction + 35 km Gostivar – Kichevo + 8,5 km Trebeniste – Struga), total **100,5 km**; Route 6 towards Kosovo (13 km Skopje – border with Kosovo) and Route 8 (6 km Podmolje – Ohrid, under construction) + Route 10 (47 km Miladinovci –Shtip, under construction), total **66 km**; new express road, Corridor X-d (16 km Gradsko – Drenovo, under construction + 10km Drenovo- Raec, under construction) + (27.5 km Bitola – Medzitlija) and Route 10 towards Bulgarian border (37 km Shtip – Radovis, under construction + 32 km Strumica – Novo Selo), total **122,5 km;** reconstruction works on Corridor VIII for upgrading of road sections towards Bulgaria, Rankovce- Kriva Palanka (23km) and Kriva Palanka-border with Bulgaria (13km), and Corridor X-d, Raec – Prilep (7.5km), total **43,5 km**

[29] Calculations aiming to set the target (2030) made by of MoTC, Department for European Union were based on the information collected from the PE "Macedonian Railways - Infrastructure" and the Rail department in the MoTC, in September 2018, as follows: Corridor X-d (**16 km** under construction) + Corridor VIII missing links: toward Albania (**63 km** from Kichevo to border crossing) + towards Bulgaria (**31 km** Kumanovo-Beljakovce, under construction + **58 km** from Beljakovce to border crossing)

Description	source of information & verification	Baseline data, year	Target 2030	unit of measure/ *Aggregation Method*	periodically & type: annual or cumulative
Number of JBC (one stop shop) that are built/ upgraded and put into operation *quantitative*	Customs Administration and MoTC/Road and Rail Department[30]	0 (rail JBC, 2017) 0 (road JBC, 2017)	5[31]	Absolute number	Yearly/commutative by 31 December of the year of the calculation
Indicator assessing the Status of / progress toward implementation of the Transport community treaty. *qualitative*	Assessments carried out by the European Commission in cooperation with the Republic of Macedonia according to article 40, paragraph 2 of the Treaty.	The country is moderately prepared in the area of transport policy. Some progress has been made with the signature of the Transport Community Treaty (EC APR, 2018)	Full alignment with the Transport acquis/ Full implementation of transport community Treaty	Descriptive	Upon of the adoption of the report in the TC steering committee (irregular timing).

istration is in charge for the road border crossings. As there is no institution identified to be in charge for the rail border crossings,

	Performance Indicator[27]	Description	source of information & verification	Baseline data, year	Target 2030	unit of measure/ *Aggregation Method*	periodically & type: annual or cumulative
5	**2.1 Logistics performance index (LPI) - infrastructure**	LPI Infrastructure describes (in score) the quality of trade and transport related infrastructure (e.g., ports, railroads, roads, information technology) worldbank.org/lpi.[32] *qualitative*	World bank	2.47 (2018)	3.2[33]	LPI Infrastructure index score 1-5 (1=low to 5=high);	N+2[34]
6	**2.2 Number of identified projects from the Sector Project pipeline (SPP) with fully secured financing for infrastructure investment**	SPP (**transpor**t) classify priority projects, as follow (i) On-going projects (in implementation); (ii) Mature Projects for infrastructure investments, including the ones with closed financial construction (but not still in implementation); (iii) Non-mature projects and strategic documents *quantitative*	MoTC as a chair of the Sector working group on Transport (Minutes of SWGT meetings) [35]	4 projects with fully secured financing for infrastructure investment (2018)	28	Absolute number	Yearly/ commutative

[32]Logistics performance index: Quality of trade and transport-related infrastructure (1=low to 5=high); Data are from Logistics Performance Index surveys conducted by the World Bank in partnership with academic and international institutions and private companies and individuals engaged in international logistics. 2009 round of surveys covered more than 5,000 country assessments by nearly 1,000 international freight forwarders. Respondents evaluate eight markets on six core dimensions on a scale from 1 (worst) to 5 (best). The markets are chosen based on the most important export and import markets of the respondents country, random selection, and, for landlocked countries, neighboring countries that connect them with international markets. Details of the survey methodology are in Arvis and others Connecting to Compete 2010: Trade Logistics in the Global Economy (2010). Respondents evaluated the quality of trade and transport related infrastructure (e.g. ports, railroads, roads, information technology), on a rating ranging from 1 (very low) to 5 (very high). Scores are averaged across all respondents. Source: World Bank and Turku School of Economics, Logistic Performance

33 The ranking of Slovenia (2018), as a country of similar size and complexity was considered as a target

[34] N+2 refers to every second year

[35] MoTC as a chair of the Sector working group on Transport is in charge to propose a priority projects for funding. Regular presentation of the SPP at the SWGT meeting held.

Description	source of information & verification	Baseline data, year	Target 2030	unit of measure/ *Aggregation Method*	periodically & type: annual or cumulative
Summary of the EC progress report statements (Progress made towards meeting accession criteria in Chapter 21, Trans-European networks, sub-chapter Transport Network) *qualitative*	EC progress report	In the area of transport networks, there is a good level of preparation. The country achieved some progress during the reporting period (PR 2018)	Negotiation for EU accession completed	descriptive	yearly
Data will be extracted from -BURs, -reports that is submitted every two years, to UNFCCC emissions of transport correspond to CO2 emissions of transport from fuel combustion *quantitative* *Aggregation Method:* Gap-filled total	Detail /aggregated data (when not published within the report) will be submitted by MoEPP per MoTC request	Do nothing scenario (1,714,303kt, 2015)	In 2030, to reduce GHG emissions by 18.6% compared to the level under the Do Nothing scenario	kt (kiloton CO_2-eq) % compared to the level under the Do Nothing scenario	N+2

Description	source of information & verification	Baseline data, year	Target 2030	unit of measure/ *Aggregation Method*	periodically & type: annual or cumulative
Goods transported by railway are the volume of goods transported by railway, annually measured in metric tons times kilometres travelled. Net-ton km is measurement unit for transport of fright, one ton freight on rail in length of 1km. *quantitative*	State statistical office	276 628 (2017)	624.870 Net ton-km[36]	Net- ton/km	Yearly annual
Multimodal/Intermodal node with terminals and platforms constructed & equip, incl. hub in Skopje (Trubarevo) *quantitative*	PE Macedonian railways - Infrastructure MoTC	0 (2017)	Tubarevo- Skopje intermodal terminal in operation	Number of Operational Multimodal / intermodal nodes	Yearly/ cumulative

	Performance Indicator[27]	Description	source of information & verification	Baseline data, year	Target 2030	unit of measure/ *Aggregation Method*	periodically & type: annual or cumulative
11	**4.1.a Reduction of rail accidents**	Indicators is to measure the Rail transport safety performance and the effectiveness of the Railway safety management system (RSMS) therefore it is a key- characters of the railway system. *Counting* total *number of Rail accidents* involving passenger, freight and other *trains (*Collision of trains, level crossings accident, accidents to person, derailment, other) happened during the year *quantitative*	State statistical office	45 (2017)	23 (50 % decrease)	Absolute number	Yearly/ annual
12	**4.1.b Status of transposition and implementation of EU Regulations and Directives part of ECAA Agreement and ensure compliance with ICAO SARPs**	Effective implementation score summarizes for the various categories covered under ICAO's Universal Safety Oversight Audit Programme: Legislation, organization, licensing, operation, airworthiness, accident investigation, air navigation services, air navigation services, aerodromes *qualitative*	ICAO audit results[37]	79.58 (2016)	96[38]	USOAP Country score 0-100 (100 is the best) Sector performance metrics	End of June following the year the ICAO audit data refers to N+2

[37] https://www.icao.int/safety/iStars/Pages/API-Data-Service.aspx

[38] Among EU members, with best score France (2017 audit)

	Performance Indicator[27]	Description	source of information & verification	Baseline data, year	Target 2030	unit of measure/ *Aggregation Method*	periodically & type: annual or cumulative
13	**4.2 Number of fatalities/million inhabitants on an annual basis, across the National and Regional Road Network**	EC indicator calculated as ratio N of fatalities happened during the year and divided to the absolute number of population (millions) at the end of respected year = N fatalities/ millions of habitants Number counted will be compared to the baseline (counting % decrease) *quantitative*	State Statistical Office, Annual Statistical reports. Information for fatalities also available online	155 (2017) fatalities 2.081 million inhabitants =155/2.075= 74.69 fatalities/million inhabitants;	Reduce of the death toll on the roads by 50% until 2030	Road fatalities/millions of habitants compared to the baseline (counting % decrease)	Yearly/ annual
14	**4.3 Number of key actions from ITS strategy implemented**	Completion of the phases for implementation of the project for deployment of ITS on road Corridor X *quantitative*	MoTC	0 (2017)	1 major project fully implemented and operational (Corridor X)	Absolute number	N+2/ cumulative

ANNEX 1

5. Transport Scenarios

5.1. Description of the Do Something scenarios 2022, 2025 and 2030

In order to estimate the impact of the Strategy for time horizons 2022, 2025 and 2030, the Transport Model available from the rail project *Preparation of detailed design and tender documentation for construction of new railway section Kriva Palanka – Border with Republic of Bulgaria as part of corridor VIII (EuropeAid/136050/IH/SER/MK)* has been further up-dated, detailed and recalibrated in order to incorporate all transport modes at the desired level of detail and functionality. All details on the transport model, as well as transport model user manual and transport model files, have been submitted to the Beneficiary.

Based on the measures proposed in the current strategy the Do Something scenarios have been defined for time horizons 2022, 2025 and 2030. The scenarios are based on a mix of transport infrastructure projects on road and rail, and on specific policy measures that would need to be considered along with the implementation of the transport infrastructure projects in order to enhance the positive effects of implementing those projects.

In the table below are presented the infrastructure components of the DS scenarios by time horizon and transport mode.

Table 30. Infrastructure components of the DS scenarios by time horizon and transport mode

ROAD

Section name	Rank of works	Length (km)	Projected budget, start and end of works			Current status	**Scenarios**					
			Budget (million euro)	Start of works	End of works							
Corridor X							**DN2020**	**DS2020**	**DN2025**	**DS2025**	**DN2030**	**DS2030**
Demir Kapija – Smokvica	New motorway	28	210	2011	2016	Finished in 2018						
Smokvica – Gevgelija	Rehabilitation	10	4	2015	2016	Finished in 2017						
Negotino – Demir Kapija	Rehabilitation	9	5	2016	2017	Finished in 2017						
Veles - Katlanovo	Rehabilitation	24	15	2013	2015	Ended						
Kumanovo - Miladinovci	Rehabilitation	23	17	2015	2017	Ended						
Whole C-X	Reconstruction of 64 bridges		35 (NATO)	2005	2015	Ended 2016						
Whole C-X (5+2) stations	Modernization of toll system		19	2014	2016	Under construction						
Gradsko-interchange Drenovo	New expressway	10.5	25	2017	2019	Under construction						
Interchange Drenovo-Farish	New expressway	10.5				Under construction						

Corridor VIII												
Kichevo - Ohrid	New motorway	57	374 (411)	2014	2020	Under construction						
Rankovci - Kriva Palanka	New express road	22	58.50	2016	2018	Under construction						
Trebeniste - Struga	New motorway	9	45	2016	2018	Tender documentation						
Route 10												
Miladinovci - Shtip	New motorway	47	206 (226)	2014	2018	Under construction						
Shtip - Radovish	New express road	28	/	2017	/	Planned						
Route 6a												
Skopje Kosovo border	New motorway	13	106	2018	/	Prepared Detailed Design						
Trunk roads – A3												
Veles - Shtip (Kadrifakovo)	Reconstruction of highway in express road	25	15	2014	2016	Ended 2017						
Shtip - Kochani	New express road	28	40	2016	2018	Under construction						

Regional roads to be considered for up-grading to express roads in the scenarios:

Road section	**Reserve of capacity in 2030 in the Do Nothing case**	**Up-grade**						
			DN2020	**DS2020**	**DN2025**	**DS2025**	**DN2030**	**DS2030**
R1203 Tetovo – Jaznice	10 – 15%	To express road						
R 2134 Dolno Sonje – Skopje	-4%	To express road						
R1401 in Strumitsa	-14%	To express road						
A4 Strumitsa to Dabilje	10 – 23%	To express road						
A3 Ohrid – Podmolje	13 – 14%	To express road						
R1102 Jurumleri – Skopje	31 – 32%	To be reconsidered in 2020						
Bd. Alexander the Great in Skopje	49%	To be considered in the SUMP Skopje Great area						
R1104 from the junction with M4 to Aracinovo	38 – 39%	To be reconsidered in 2025						
A3 Shtip – Vinitsa	28 – 32%	To be reconsidered in 2025						
R1103 between A1 and Negotino	18 - 19%	To express road						
R1103: Negotino – A4	36 – 44%	To express road						
R1401 from the junction with R1105 to Strumitsa	31 – 36%	To be reconsidered in 2025						

A4 Konce – Radovis	38 – 44%	To be reconsidered in 2025							

RAIL

Section name	Rank of works	Length (km)	Projected budget, start and end of works			Current status	**Scenarios**					
			Budget (million euro)	Start of works								
Corridor X/X-d							**DN2020**	**DS2020**	**DN2025**	**DS2025**	**DN2030**	**DS2030**
Tabanovce – Kumanovo	Reconstruction	12	6,9	2012	2013	Finished						
Miravci – Smokvica	Reconstruction	12		2012	2013	Finished						
Nogaevci – Gradsko	Reconstruction	8	10,4	2012	2014	Under construction						
Gradsko - Kukurichani	Reconstruction	10		2012	2014	Under construction						
Kukurichani - Negotino	Reconstruction	13		2012	2014	Under construction						
Main passang. station - Skopje	Reconstruction	/	2,9	2014	2015	Finished						
10 Rail Stations on Corr.X/X-d	Reconstruction	/	2,5	2014	2015	Finished						
GSM-R and ETCS-1	New equipment	/	7,2	2014	2016	Under construction						

Bitola– Kremenica (CX-d)	Reconstruction	16	21,0	2014	2016	Under construction						
Corridor VIII												
Kumanovo - Beljakovce	Reconstruction	31	47,1	2014	2016	Under construction						
Beljakovce- Kriva Palanka	New railway	36	2,5	2014	2015	Prepared Detailed Design						
Kriva Palanka- Bulgarian border	New railway		3	2015	2017	Prepared Detailed Design						
Kichevo – Albanian border	New railway	63	8	2014	2017	Prepared Detailed Design						-

The transport policy measures are presented in the table below.

Table 31. Transport policy measures NTS - DS scenarios 2022, 2025 and 2030

Policy measure	2020	2025	2030
	Compared to 2015		
Road toll			
Cars	+15%	+20%	+30%
Trucks	+15%	+20%	+30%
VOC (Vehicle Operating Cost)	+20%	+25%	+35%
Bus fare	+10%	+10%	+10%
Rail pass tariffs	constant	constant	constant
Rail freight tariffs	-10%	-20%	-20%
Rail accessibility (accessibility to stations in main cities)	Max 40 min for 80% of the population in the area	Max 30 min for 80% of the population in the area	Max 20 min for 80% of the population in the area
Rail operation (operation speed)	+20%	+20%	+20%

The reason and details on considering specific transport policy soft measures are explained below.

Road toll

Road toll is a transport policy measure aiming to internalise the external costs, thus to make the user to pay for the negative external impact especially regarding the air pollution and emission of GHG (CO2). A relatively moderate increase of road toll has been considered in the scenarios for each time horizon.

Eventually the road toll for the freight transport can increase at a higher rate than the one for passenger cars, in order to get a higher modal shift from road to rail, especially on long distance freight transport (import, export and transit).

However, it has been proved through the sensitivity runs with the transport model that this measure has a quite low impact on the modal shift, up to a certain value of the toll (looking at it as a % from the VOT – Value of Time).

VOC (Vehicle Operating Cost)

It has been considered that the VOC is increasing in time, due to the higher cost for the fuel, car maintenance, tires, insurance, etc. The growth considered for the VOC is quite moderate. Moreover,

the VOC can increase much higher in the specific urban areas depending of the local policy on car access to the centre and to highly congested areas of the cities.

It has been observed through sensitivity runs of the transport model that this measure has a moderate impact on the modal shift.

Bus fare

It has considered that the bus fare will increase with 10% in 2022 and will remain hen stable up to year 2030. However, this can change in time and the impact of the new bus fare can be estimated.

Rail passenger tariffs

It has been estimated that the fare for the rail passengers will remain stable up to year 2030. Various options could be eventually considered for decreasing the rail passenger fare, but it seems that it is already at a low level.

Rail freight tariffs

It has been considered that due to the improvements in the rail network the tariffs for the rail freight will decrease with 10% in 2022 and with 20% in 2025 compared to 2015, and will remain stable up to year 2030. This has a logic behind as due to the improvement in the rail network, and also due to the agreements with neighbouring countries on border crossing procedures and on interoperability of the rail, the time and specific costs will decrease, leading to a decrease of the rail tariffs also.

Rail accessibility (accessibility to stations in main cities)

It is understood that the accessibility of the rail stations in main cities and at regional level is not very high, excepting Skopje area. Often the rail stations are at a certain distance for the dense populated areas, and this is not an attractive aspect for using the rail transport. Therefore, it is strongly proposed to increase the accessibility to the rail stations in main cities and regions, in order to enhance the use of rail transport.

Consequently, it has been proposed to increase the rail accessibility to the stations as follows:

- to max 40 minutes for 80% of the population of the main city and influence area in 2022;
- to max 30 minutes for 80% of the population of the main city and influence area in 2025;
- to max 20 minutes for 80% of the population of the main city and influence area in 2030.

It has been proved that this measure has a very strong impact in the transport model regarding the use of rail transport.

Rail operation (operation speed)

It has been considered that the rail operation speed will increase with 20% in average, this means reaching a speed of 80 km/h for the passenger trains, in average, on the whole rail network. However, it is recommended to look for increasing further the rail speed for passenger trips, up to a minimum of 120 km/h, due to the strong “competition” from road transport also from the new developments and construction of the motorways.

5.2. Effect of implementing Do Something scenarios on modal share

Based on the above implemented projects and measures the following results have been obtained in terms of modal distribution by transport mode, for passengers and freight.

In the tables below are presented the results in terms of modal distribution for the passenger transport.

Table 32. Results Do Something scenario 2022, modal share passenger transport

	DN 2022	DS 2022	Change
Total trips per day			
Road	582926	582073	**-0.15%**
Bus	33850	32861	**-2.92%**
Rail	4535	6377	**+ 40.63%**
Total	**621311**	**621311**	
Modal share			
Road	93.82%	93.68%	
Bus	5.45%	5.29%	
Rail	0.73%	1.03%	
Total	**100.00%**	**100.00%**	

In the table above it is observed that the overall impact of implementing the measures foreseen in the DS scenario 2022 is quite positive. The rail passenger share is increasing with 40.6%. The rail trips are attracted from both bus and private car in more or less equal proportion from each.

However, it is needed to mention that the initial share of private car is close to 94% of the total trips, which is much above European average.

Table 33.Results Do Something scenario 2025, modal share passenger transport

	DN 2025	DS 2025	Change
Total trips per day			
Road	630178	627431	**-0.44%**
Bus	36182	35407	**-2.14%**
Rail	4886	8408	**+72.08%**
Total	**671246**	**671246**	
Modal share			
Road	93.88%	93.47%	
Bus	5.39%	5.27%	
Rail	0.73%	1.25%	

Total	**100.00%**	**100.00%**	

In the table above it is observed that the overall impact of implementing the measures foreseen in the DS scenario 2025 is positive also, having in fact a continuation of the trend observed in 2022. The rail passenger share is increasing with 72%. It is interesting to observe that, due to the supplementary measures considered in 2025, rail trips are attracted in a much higher proportion from private car and less from the bus transport.

Table 34. Results Do Something scenario 2030, modal share passenger transport

	DN 2030	DS 2030	Change
Total trips per day			
Road	723460	712476	**-1.52%**
Bus	41835	40910	**-2.21%**
Rail	5683	17592	**+209.56%**
Total	**770978**	**770978**	
Modal share			
Road	93.84%	92.41%	
Bus	5.43%	5.31%	
Rail	0.74%	2.28%	
Total	**100.00%**	**100.00%**	

In the table above it is observed that the overall impact of implementing the measures foreseen in the DS scenario 2030 is very positive also, having in fact a continuation of the trend observed in 2022 and 2025. The rail passenger share is increasing with 210%. It is interesting to observe that, due to the supplementary measures considered in 2025 and 2030, rail trips are attracted in a much higher proportion from private car and less from the bus transport.

In conclusion, it is observed that a positive impact is expected related to the modal shift from road to rail for passenger transport. However, due to the very high share of private car in the base year, this being close to 94%, the aim would be to increase even more, if possible, the potential use of rail transport. This shall be achieved if the interurban trips will be very well coupled with their urban component. This would be achievable even more after the development and implementation of the SUMPs – Sustainable Urban Mobility Plan for the main cities.

Regarding the impact of the freight transport, in the tables below are presented the results in terms of modal distribution for freight.

Table 35. Results Do Something scenario 2022, modal share freight transport

	DN 2022	DS 2022	Change
Total tonnes per day			
Road	183119	180520	**-1.42%**
Rail	5172	7770	**+50.25%**
Total	**188291**	**188291**	

Modal share			
Road	97.25%	95.87%	
Rail	2.75%	4.13%	
Total	**100.00%**	**100.00%**	

In the table above it is observe that the measures considered in the DS scenario have a significant impact on the modal share for freight. Three main "soft" measures play a very important role here acting in the same directions, namely increase of road toll, of the VOC and decrease of the rail tariffs. As a result, the rail share for freight would possibly increase with 50% in 2022.

Road freight share is decreasing with 1.4%, as the initial total volume of freight transported by road is very high, with more than 97% of the total transported goods.

Table 36. Results Do Something scenario 2025, modal share freight transport

	DN 2025	DS 2025	Change
Total tonnes per day			
Road	203930	195220	**-4.27%**
Rail	5485	14194	**+158.78%**
Total	**209415**	**209414**	
Modal share	97.38%	93.22%	
Road	2.62%	6.78%	
Rail	**100.00%**	**100.00%**	
Total			

In the table above it is observe that the measures considered in the DS scenario 2025 have a significant impact on the modal share for freight, as a continuation of the trend observed for 2022. As it has been already mentioned, three main "soft" measures play a very important role here acting in the same directions, namely increase of road toll, of the VOC and decrease of the rail tariffs. As a result, the rail share for freight would increase with 159% in 2025.

Table 37. Results Do Something scenario 2030, modal share freight transport

	DN 2030	DS 2030	Change
Total tonnes per day			
Road	254844	24068	**-5.56%**
Rail	7122	21283	**198.83%**
Total	**261966**	**261967**	
Modal share	97.28%	91.88%	
Road	2.72%	8.12%	
Rail	**100.00%**	**100.00%**	
Total			

In the table above it is observe that the measures considered in the DS scenario 2030 have a significant impact on the modal share for freight, as a continuation of the trend observed for 2022 and 2025. As it has been already mentioned, three main "soft" measures play a very important role here acting in

the same directions, namely increase of road toll, of the VOC and decrease of the rail tariffs. As a result, the rail share for freight would increase with 199% in 2030.

In addition, the Do Something scenario includes mitigation measures from the transport sector as defined in the Second Biennial Update Report on Climate Change of the Republic of Macedonia (MOEPP 2017).

5.3. Effect of implementing Do Something scenarios on emissions

Based on the results of the model runs in terms of traffic flows, loading factors for road and average speed by type of road vehicle on the network, road emissions have been estimated for the Do Nothing and Do Something scenarios for each time horizon, based on the CORINAIR[39] approach and equations for estimating emissions from road transport vehicles.

The results are presented in the table below.

Table 38. Results of implementing Do Something scenario on road emissions, tonnes per year and reduction in %

Year	NOX	CO2	PM10
2015	3793	1,714,303	119
2022			
DN Scenario	5583	2,013,096	186
DS Scenario	5344	1,877,191	174
Reduction of emissions	**240**	**135,905**	**12**
2025			
DN Scenario	6049	2,190,346	204
DS Scenario	5667	1,859,265	185
Reduction of emissions	**383**	**331,081**	**19**
2030			
DN Scenario	7402	2,021,339	258
DS Scenario	6781	2,482,987	229
Reduction of emissions	**622**	**461.648**	**29**
Reduction of emissions in %, Do Something versus Do Nothing scenario			
2022	**4.3%**	**6.8%**	**6.6%**
2025	**6.3%**	**15.1%**	**9.4%**
2030	**8.4%**	**18.6%**	**11.2%**

[39] Air pollutant emission inventory guidebook of the European environment agency

From the above table it is observed that as a result of implementing the foreseen measures that have produced a modal shift from road to rail for passenger and freight transport, the emissions are also decreasing.

The decrease of emissions is not very high due to the fact that road transport has a very high initial share, and that the overall demand for transport is expected to increase for both passengers and freight in the coming period. For example, the expected decrease for CO2 emissions, compering the Do Something scenario with the Do Nothing one, is 3% in 2022, 4.7% in 2025 and 6.8% in 2030.

However, these figures reflect the results for **interurban transport** only. As it is well known that a high share of emissions from transport are those of the urban areas, the future SUMP's proposed to be developed for the main cities should focus on reducing the car use and increasing the use of public transport, in order to achieve a higher reduction of emissions from transport at the level of the whole country.

ANNEX 2

6. Implementation Plan

The strategic scheduling of activities of the transport sector might be described as a tool at the service of major economic and social policy objectives. For each transport mode, the National Transport Strategy targets to describe the actions to be implemented to achieve the general and specific objectives in the short (2018-2020), medium (2021-2025) and long term (2026 - 2030).

The most important elements of the National Transport Strategy (NTS) are the followings:

- NTS is consistent with EU policy of transport;
- NTS sustains social and economic demands and support economic development;
- NTS satisfies the needs in terms of maintenance, improvement and development of transport infrastructure;
- NTS is financially sustainable;
- NTS is comply with EU standards, regulations and the best practices implemented in the EU countries;
- NTS satisfies safety and information requirements;
- NTS contains permissible environmental impacts.

All actions have been allocated to different time periods on the basis of their maturity, budget restriction, contract priorities, financial eligibility etc. The following development categories can be defined: actions to be implemented primarily (**in short term-St**), action to be implemented after proper preparation (**in medium term-Mt**) and actions with low level of maturity and/or constrains (**in long term-Lt**).

The National Transport Strategy defines for each action the following information:

- The stakeholders responsible to implement the action (e.g. Ministry, Infrastructure manager, etc.).
- The instruments to be used to implement the action (e.g. financial instruments, legislative changes, etc.).

The assessed amount for realisation of NTS is 4.191,08 million euro in the period 2018-2030. This estimation is done according to presented strategic plan of activities and financial plan for each activity. Most of the costs are estimated according to unit prices for particular actions, or they are related of the cost estimations made in transport infrastructure project based of the bill of quantities.

Considering that this is indicative implementation plan and might be amended, these are only the financial projections of the strategic actions estimated for the short St, medium Mt and long terms Lt are following:

- St – until 2021 769,23 mill. Euro
- Mt- until 2025 898,55 mill. Euro
- Lt - until-2030 2523,30 mill. Euro

Considering the mid-term review of the strategy and the possibilities that some of the actions can migrate between short St, medium Mt and long terms Lt these are very provisional calculations which now are rising up for the whole period of implementation up to total of **4.191,08** Mill. Euro. It is also planned that these Strategic actions will be more developed in an additional document by consultants in the following period after the adoption of the strategy.

Strategic actions

Action N.	Measure	Specific Objective	Mode	Definition	Period			Responsible Institution	Instruments	indicator	Assessed Budget (mill. euro)
					S	M	L				
1	MI 1	1.1	RO	Construction of 57 km new motorway Kichevo – Ohrid, along the Corridor VIII of core network	X			PE of SR in cooperation with MoTC	Project management of construction	Motorway finished and open for traffic	374,00
2	MI 1	1.1	RO	Construction of 42 km new motorway Gostivar - Kichevo along the Corridor VIII of core network			X	PE of SR in cooperation with MoTC	Project management, tendering procedures	Motorway finished and open for traffic	280,00
3	MI 1	1.1	RO	Construction of 9 km new motorway Trebeniste – Struga along the Corridor VIII of core network			X	PE of SR in cooperation with MoTC	Project management, tendering procedures	Motorway finished and open for traffic	45,00
4	MI 1	1.1	RO	Undertaking activities for Modernisation and electronic tolls on Corridor X and modernisation and construction of tolls on the new sections	X			PE of SR in cooperation with MoTC	Project management of construction	Electronic tolls operational	28,80
5	MI 1	1.1	RO	Rehabilitation of road section Kumanovo – Rankovce (Stracin) with length of 31,5 km on Corridor VIII	X			PE of SR in cooperation with MoTC	Project management of construction	Rehabilitation finished and open for traffic	15,00
6	MI 1	1.1	RO	Undertaking activities for rehabilitation of sections on Corridor X and Xd (Veles-Gradsko, Gradsko - Negotino, Gevgelija – Bogorodica/Border with Greece, Prilep - Bitola (Krklino), Bitola(Krklino) – Medzitlija/Border with Greece)		X		PE of SR in cooperation with MoTC	Project management of construction	Rehabilitations finished and open for traffic	14,32
7	MI 1	1.1	RO	Undertaking activities for rehabilitation of sections on Corridor VIII (Skopje – Tetovo, Tetovo – Gostivar)		X		PE of SR in cooperation with MoTC	Project management of construction	Rehabilitation finished and open for traffic	41,93

Action N.	Measure	Specific Objective	Mode	Definition	Period			Responsible Institution	Instruments	indicator	Assessed Budget (mill. euro)
					S	M	L				
8	MI 1	1.1	RO	Undertaking activities for upgrading the SEETO routes 6a, 8 and 10 (Skopje – Blace/border with Kosovo, Bypass Resen, Strumica – Valandovo)			X	PE of SR in cooperation with MoTC	Project management of construction	Construction finished and open for traffic	132,00
9	MI 1	1.1	RO	Undertaking activities for upgrading Corridor VIII, section Struga – Kjafasan			X	PE of SR in cooperation with MoTC	Project management of construction	Reconstruction finished and open for traffic	80,00
10	MI 1	1.1	RO	Construction of new motorway/expressway sections on Corridor X and Xd (Veles – Prilep, Prilep-Bitola, Bitola – Medzitlija)			X	PE of SR in cooperation with MoTC	Project management of construction	Construction finished and open for traffic	475,00
11	MI 1	1.1	RO	Construction of 22 km new expressway Rankovci – Kriva Palanka along the Corridor VIII of core network		X		PE of SR in cooperation with MoTC	Project management, tendering procedures	Expressway finished and open for traffic	58,50
12	MI 1	1.1	RO	Construction of 15 km new expressway Kriva Palanka – border with Bulgaria along the Corridor VIII of core network		X		PE of SR in cooperation with MoTC	Project management, tendering procedures	Expressway finished and open for traffic	100,00
13	MI 1	1.1	RO	Construction of 34 km new expressway Gradsko - Prilep along the Corridor X-d of comprehensive network (ongoing)	X			PE of SR in cooperation with MoTC	Project management, tendering procedures	Expressway finished and open for traffic	60,00
14	MI 1	1.1	RO	Construction of 13km new motorway Skopje- border with Kosovo along the Route 6-a of core network		X		PE of SR in cooperation with MoTC	Project management, tendering procedures	Motorway finished and open for traffic	106,00
15	MI 1	1.1	RO	Construction of 47 km new motorway Miladinovci – Shtip along the Route 10 of comprehensive network	X			PE of SR in cooperation with MoTC	Project management of construction	Motorway finished and open for traffic	206,00

Action N.	Measure	Specific Objective	Mode	Definition	Period			Responsible Institution	Instruments	indicator	Assessed Budget (mill. euro)
					S	M	L				
16	MI 1	1.1	RO	Construction of 40 km new expressway Shtip - Radovis along the Rout 10 of comprehensive network	X			PE of SR in cooperation with MoTC	Project management of construction	Expressway finished and open for traffic	28,00
17	MI 1	1.1	RO	Construction of 30 km new expressway Strumica – border with Bulgaria along the Corridor VIII of core network			X	PE of SR in cooperation with MoTC	Project management, tendering procedures	Expressway finished and open for traffic	130,00
18	MI 1	1.1/4.1	RO/RW	Improvement of the safety features of the road and rail infrastructure with installing proper equipment, signalization and other infrastructure related measures		X		MoTC in cooperation with PE of SR and PE MR-I	Project management, tendering procedures	FS, DD finished	10,00
19	MI 2	1.1	RW	Construction of 88 km new single railway track line section Kumanovo – border with Bulgaria on the Eastern part of Corridor VIII		X		PE MR-I in cooperation with MoTC	Project management, tendering procedures	Railway line finished and open for traffic	400,00
20	MI 2	1.1	RW	Construction of new 62 km single railway track line section Kichevo – border with Albania (Lin) on the Western part of Corridor VIII			X	PE MR-I in cooperation with MoTC	Project management, tendering procedures	Railway line finished and open for traffic	500,00
21	MI 2	1.1	RW	Construction of new 38,7 km railway section Veles – Drachevo on the Corridor X			X	PE MR-I in cooperation with MoTC	Project management, tendering procedures	Railway line finished and open for traffic	550,00
22	MI 2	1.1	RW	Construction of 16 km new single railway track line section Bitola – border with Greece as a part of Corridor X-d	X			PE MR-I in cooperation with MoTC	Project management of construction	Railway line finished and open for traffic	23,00
23	MI 2	1.1	RW	Reconstruction of 17 km single railway track line section Skopje – border with Kosovo part of Route 10 of comprehensive network			X	PE MR-I in cooperation with MoTC	Project management, tendering procedures	Railway line finished and open for traffic	30,00

Action N.	Measure	Specific Objective	Mode	Definition	Period			Responsible Institution	Instruments	indicator	Assessed Budget (mill. euro)
					S	M	L				
24	MI 2	1.1	RW	Undertaking activities for reconstruction of existing 129 km single railway track line section Veles – Prilep-Bitola on the Corridor X-d according to EU-TSI			X	MoTC in cooperation with PE MR-I	Project management, tendering procedures	FS, DD finished	13,00
25	MI 2	1.1	RW	Undertaking activities for construction of railway link between Corridor VIII and X-d for increasing rail network development (Kichevo-Bitola)			X	MoTC in cooperation with PE MR-I	Project management tendering procedures	Pre-FS, FS, DD finished	3,00
26	MI 2	1.1	RW	Undertaking activities for improvement of the conditions of the rail sections Nogaevci – Gradsko - Negotino, Negotino - Miravci and Smokvica – Gevgelija as part of Corridor X			X	MoTC in cooperation with PE MR-I	Project management tendering procedures	Pre-FS, FS, DD finished	20,00
27	MI 2	1.1	RW	Undertaking activities for improvement of the conditions of the rail section Kumanovo-Deljadrovce			X	PE MR-I in cooperation with MoTC	Project management tendering procedures	Railway line finished and open for traffic	50,0
28	MI 3	1.2	RO	Increasing the capacity with new traffic lanes for heavy goods vehicles (HGV) at the border crossing Bogorodica with Greece		X		Custom administration in cooperation with MoTC and PE of SR	Project management, tendering procedures	Additional traffic lines finished and open for traffic	5,00
29	MI 3	1.2	RW	Increasing track capacity at the border crossing Tabanovce with Serbia (Corridor – X)			X	PE MR-I in cooperation with MoTC	Project management, tendering procedures	Additional tracks finished and open for traffic	10,00
30	MI 3	1.2	RW	Construction of Joint border crossing station in Tabanovce, border with Serbia (Corridor – X)	X			MoTC in cooperation with PE MR-I and Serbian authorities	Project management, tendering procedures	Train station constructed and operational	5,20
31	MI 4	1.2	RW	Analysis for physical improvement of railway infrastructure at the existing border crossings with neighbouring countries		X		MoTC and PE MR-I	Project management, tendering	Analysis done	0,10

Action N.	Measure	Specific Objective	Mode	Definition	Period			Responsible Institution	Instruments	indicator	Assessed Budget (mill. euro)
					S	M	L				
									procedures		
32	MI 4	2.1	RW	Construction of new railway link Kichevo-thermal power plant Oslomej of about 10km			X	PE MR-I in cooperation with MoTC	Project management, FS, DD tendering procedures	Pre-FS, FS, DD finished, Rail track finished and open for traffic	25,00
33	MI 4	2.1	RW	Construction of new railway link Bitola - thermal power plant REK - Bitola of about 11km			X	PE MR-I in cooperation with MoTC	Project management, FS, DD tendering procedures	Pre-FS, FS, DD finished, Rail track finished and open for traffic	25,00
34	MI 4	2.1	RW	Undertaking activities for reconstruction of railway infrastructure according to EU-TSI[40] in the region of Skopje for introduction of regional rail public transport in this region			X	MoTC and PE MR-I	Project management, tendering procedures	FS, DD finished	3,00
35	MI 4	2.1	RW	Undertaking activities for reconstruction and modernization of existing 86 km single railway track line section Veles – Shtip - Kochani on the Eastern part of the country according to EU-TSI			X	MoTC and PE MR-I	Project management, tendering procedures	FS, DD finished	3,00
36	MI 5	2.1	RW	Undertaking activities for construction of railway links for high speed railway line between Skopje-Tetovo, Skopje-Kumanovo, Skopje-Veles, Veles-Bitola, Veles-Gevgelija			X	MoTC and PE MR-I	Project management, tendering procedures	Master plan (MP), FS finished	2,50
37	MI 5	2.1	RO	Construction of 28 km new expressway Shtip - Kochani along the trunk road A3 in the country network		X		PE of SR in cooperation with MoTC and	Project management of construction	Expressway finished and open for traffic	40,00

[40] Technical specifications for interoperability

Action N.	Measure	Specific Objective	Mode	Definition	Period			Responsible Institution	Instruments	indicator	Assessed Budget (mill. euro)
					S	M	L				
38	MI 6/MI11	2.1	RO/UR	Selected road supplement infrastructure improvements (signalization, safety measures, pedestrian paths, parking and road facilities) among other to facilitate access for people with special needs		X		Municipalities country wide in cooperation with MoTC	Project management, tendering procedures	Supplement Infrastructure improved	10,00
39	MI 2/ MI 7	1.1	RW	Undertaking activities for reconstruction and modernization of existing 103 km single railway track line section Skopje – Kichevo on the Western part of Corridor VIII according to EU-TSI			X	PE MR-I in cooperation MoTC	Project management, tendering procedures	FS, DD finished	13,00
40	MI 8/MI 15	2.1/ 3.2	Air/ MM	Undertaking activities for establishing railway connection between the main passenger station in Skopje with the airport in Skopje			X	MoTC and PE MR	Project management, tendering procedure	FS, DD, rail connection finished and open for traffic	30,00
41	MI 9	3.1	WA	Reconstruction of ports at the Ohrid lake		X		MoTC	Project management, tendering procedures	Reconstruction finished	2,00
42	MI 9	3.2	MM	Improving lake port accessibility with roads for all users		X		MoTC	Project Management, tendering procedures	Improvements realized	0,20
43	MI 10	3.1	Air	Preparing a study(s) for impact of air transport pollution in the country and of the airports on the surrounding environment			X	MoTC in cooperation with Civil Aviation Agency, M-NAV and MoEPP	Project Management, tendering procedures	Study (s) prepared	0,20
44	MI 10	3.1	RW	Preparing study for reduction of noise pollution from railway transport			X	MoTC in cooperation with PE MR-I	Project Management tendering procedures	Study prepared	0,10

Action N.	Measure	Specific Objective	Mode	Definition	Period			Responsible Institution	Instruments	indicator	Assessed Budget (mill. euro)
					S	M	L				
45	MI 11	3.2	UR	Undertaking activities for supporting the Urban Public Transport development (UPT) in each bigger cities		X		MoTC, Local governments of the bigger cities	Project Management, tendering procedures	Program for UPT prepared	5,00
46	MI 11	3.1	UR	Financial support for purchasing of environmental friendly transport vehicles in public transport		X		Municipalities in cooperation with MoTC and MoF	Financial instruments Project management	New vehicles purchased	20,0
47	MI 11	3.1	UR	Undertaking activities for public transport investments (Skopje tram or light railway)	X			City of Skopje in cooperation with MoTC and MoF	Project Management, tendering procedures	Update existing studies, DD, Financial support secured	5,00
48	MI 12	3.1	WA	Preparing a study and legislation enforcement to mitigate impact of waterway lake transport on the surrounding environment		X		MoTC in cooperation with MoEPP	Project Management, tendering procedures	Study prepared	0,20
49	MI 13/16	3.3	MM	Realisation of multimodal terminal at marshalling station Trubarevo (according to recommendations from FS, 2014		X		MoTC	Project Management, tendering procedures	Multimodal terminal constructed	20,00
50	MI 14	3.2	UR	Undertaking activities to support usage of public transport with financial incentives for special group of users (students, unemployed…)	X			Municipalities	Financial Instruments, project management	Financial support secured	1,00
51	MI 14	3.2	MM	Preparing a study and supporting research for modal shift (road-rail)	X			MoTC in cooperation with universities, research institutes	Project Management, tendering procedures	Research/ study completed	0,20
52	MI 14	3.2	MM	Undertaking activities to improve public transport connectivity and accessibility for the passengers at railway stations	X			MoTC in cooperation with	Project Management	Improvements realized	0,50

Action N.	Measure	Specific Objective	Mode	Definition	Period			Responsible Institution	Instruments	indicator	Assessed Budget (mill. euro)
					S	M	L				
								PE MR-I and Municipalities			
53	MI 15	3.2	UR	Undertaking activities for upgrading the infrastructure for non-motorized transport modes in cities	X			Municipalities in cooperation with MoTC	Project Management, tendering procedures	Infrastructure measures implemented	3,00
54	MI 16	3.2	MM	Undertaking activities for introducing combined tariffs for bus-rail public transport ticket		X		Municipalities in cooperation with JSC MR Transport and MoTC	Project Management	New services introduced	0,50
55	MI 17	4.2/4.3	RW/ RO	Undertaking activities for upgrading of rail and road level crossings and improvement of traffic safety (infrastructure, signs and equipment)		X		PE MR-I in cooperation with MoTC	Project Management, tendering procedures	Rail and road level crossings upgraded	3,00
56	MI 18	4.2	UR	Undertaking activities for infrastructure rehabilitation of black spots in urban road network	X			Municipalities in cooperation with MoTC	Project Management, tendering procedures	Black spots in urban areas reduced	2,00
57	MI 19	4.2	RO	Rehabilitation of black spots on the state road network	X			PE of SR in cooperation with MoTC	Project Management, tendering procedures	Black spots on national road network reduced	4,00
58	MI 20	2.1	UR	Support small infrastructure projects in urban areas (provision of footways, controlled signals for at-grade pedestrian crossings, pedestrian-only urban areas, segregated bicycle lanes etc.)		X		Municipalities in cooperation with MoTC	Project Management, tendering procedures	Urban infrastructure facilities improved	0,50
59	MI 21	2.1	All	Adapting infrastructure facilities for improving the access of person with reduced mobility in the railway stations, road network, parking lots, as well as in public transport and public space		X		Municipalities, PE of SR, PE of MR-I in cooperation MoTC	Project Management, tendering procedures	Infrastructure facilities improved	10,00

Action N.	Measure	Specific Objective	Mode	Definition	Period			Responsible Institution	Instruments	indicator	Assessed Budget (mill. euro)
					S	M	L				
60	MI 23	1.2	RO/RW	Development of mechanism for regular and ad-hock monitoring of time spent on road/rail border crossings (freight/passengers) on selected border crossing		X		MoTC in cooperation with Customs	Project Management, tendering procedures	Mechanism for regular and ad-hock monitoring of time spent on border crossings developed	0,25
61	MI 24	2.2	Air	Update/develop a National Aviation Development Strategy	X			MoTC	Project Management, tendering procedures	National Aviation Strategy developed	0,30
62	MI 27	3.2	RW	Introducing measures to increase operation speed and frequency of railway passenger transport according to transport demand analysis	X			MoTC	Project Management	Improvements realized	0,15
63	MI 28	3.3	MM	Improving rail and road infrastructure and facilities for easier multimodal connection			X	MoTC in cooperation with PE MR-I, PE of SR and Municipalities	Project Management	Financial support secured	5,00
64	MI 31	4.2	RO	Preparation of a new National Road Safety Strategy in accordance with UN Decade of actions for road safety with action plan		X		Republic Council for Road Traffic Safety in cooperation with MoTC	Project Management, Tendering procedures	National Road Safety Strategy adopted	0,20
65	MI 34	4.3	RO	Install/update traffic management and surveillance system (IT), permitting on-line monitoring, traffic light control, bi-directional signalling for time-based traffic flow management at peak hours, centralized control centre, (ITS) etc.			X	PE of SR, Municipalities in cooperation with MoTC	Project Management, Tendering procedures	Traffic management in place and functional	38,00

Action N.	Measure	Specific Objective	Mode	Definition	Period			Responsible Institution	Instruments	indicator	Assessed Budget (mill. euro)
					S	M	L				
66	RM 1	1.3	All	Strengthening institutional capacities and human resources for implementation of TCT (capacities for improvement of the legislation/regulations)	X			MoTC	Capacity building, Legislative interventions	Legislation/ regulations adopted	0,03
67	RM 2	1.3	Air	Harmonisation with EU legislation and international standards for aviation with aim to maintain high levels of safety and security of aircraft, airports and air navigation services		X		MoTC	Legislative Interventions	Legislative adopted	/
68	RM 3	1.3	RW	Prepare the new railway code in line with the respective EU Directives, especially EU Directive 2012/34/EU - European railway area		X		MoTC	Legislative Interventions	Legislative adopted	/
69	RM 4	2.3	Air	Undertaking activities to support the Air traffic management (ATM) in order to cope with sustained air traffic growth and operations under the safest, most cost- and flight-efficient and environmentally friendly conditions (Single European Sky framework)		X		M-NAV in cooperation with CAA and MoTC	Project Management, Tendering procedures	Increased capacities of the Air traffic management system	tbd
70	RM4	2.2	Air	Undertaking activities to increase the number of available airlines destination	X			MoTC	Project management	New airlines open for traffic	5,00
71	RM 5	3.1	RO	Undertaking activities to reduce the impact of HGV's in urban areas and the road network	X			Municipalities, PE of SR in cooperation with MoTC	Legislative Interventions	Regulative adopted	/
72	RM 6	1.3	All	Undertaking activities to align with the safety standards for infrastructure, vehicles, and equipment of the EU and international standards and obligations		X		MoTC	Legislative Interventions	Regulative adopted	/
73	RM 7	1.3	All	Undertaking activities to align with the EU standards for transportation of person with reduced mobility especially concerning the usage of public transport and public space	X			MoTC	Legislative interventions	Regulative adopted	/

Action N.	Measure	Specific Objective	Mode	Definition	Period			Responsible Institution	Instruments	indicator	Assessed Budget (mill. euro)
					S	M	L				
74	OSM 1	1.2	RW	Make bilateral agreements with neighbouring countries for common customs and police controls at the borders for transport of passengers and goods		X		MoTC	Legislative interventions	Signed bilateral agreements	/
75	OSM 3	1.3	All	Undertaking activities to align with the EU technical standards for design and implementation of infrastructure projects	X			MoTC	Legislative interventions	Technical rulebooks prepared and adopted	1,00
76	OSM 4/OSM 13	2.1/2.3	RO	Undertaking activities for establishment/full implementation of Road Asset Management System (RAMS) in the planning and decision making process in road maintenance activities	X			PE of SR in cooperation with MoTC	Project management	RAMS in place and operational	1,50
77	OSM 4/OSM 13	2.1/2.3	RW	Undertaking activities for establishment/full implementation of Rail Infrastructure Asset Management System (RIMS) in the planning and decision making process in rail maintenance activities	X			PE MR-I in cooperation with MoTC	Project management	RIMS in place and operational	1,50
78	OSM 5/OSM 12	2.1/2.3	RO	Undertaking activities for strengthening the capacities for sound financial management, planning and maintenance activities of the national road network for regular, winter and emergency maintenance[41]	X			PE of SR in cooperation with MoTC	Project Management, Financial instruments	Maintenance activities properly planned and executed	tbd
79	OSM 5/ OSM 12	2.1/2.3	RO	Undertaking activities for strengthening the capacities for sound financial management, planning and maintenance of local roads network for regular, winter and emergency maintenance	X			Municipalities	Project Management, Financial instruments	Maintenance activities properly planned and executed	tbd
80	OSM 6/OSM 13	2.1/2.3	RW	Undertaking activities for strengthening the capacities for sound financial management, planning and maintenance activities of the	X			PE MR-I in cooperation with MoTC	Project Management, Financial instruments	Maintenance activities properly	tbd

[41] Consultants estimations is 6000EUR/km/Year

Action N.	Measure	Specific Objective	Mode	Definition	Period			Responsible Institution	Instruments	indicator	Assessed Budget (mill. euro)
					S	M	L				
				national rail network for regular and emergency maintenance[42]						planned and executed	
81	OSM 7	2.2	All	Development of study/analysis for use of public-private partnership for transport sector development		X		MoTC	Project management, tendering procedure	Study/analysis is prepared	0,50
82	OSM 8	2.2	All	Support research works for assessment of external transport costs (economic, health, environment)		X		Universities in cooperation with MoTC	Research work	Assessment prepared	0,15
83	OSM 8	2.2	All	Preparing of Transport Master Plan to sets out the framework and the overall priorities which will guide transport investment in long term for the next 10-15 years	X			MoTC and MoF (CFCD)	Financial instruments	Master Plan is prepared	2,50
84	OSM 8	2.2	All	Transport related Single project pipeline software to be updated in accordance with the EU standards for multi-criteria analysis	X			MoTC	Project Management, Tendering procedure	SPP Transport updated and user-friendly	0,20
85	OSM 8	2.3	All	Establishment of mechanism for regular data collection/survey on national and urban mobility (based on the GTMP and first SUMP's)	X			MoTC in cooperation with State Statistical Office	Preparation of methodology/ survey	Data collection in place	0,10
86	OSM 10/OSM 14	2.3	All	Undertaking activities for development of particular entity in charge for sound transport statistics and research and development in the domain of the transport systems			X	MoTC in cooperation with Universities, State Statistical Office	Financial instruments	Entity fully operational	0,50
87	OSM 15	2.3/3.3	RO	Undertaking activities for upgrading and strengthening the capacity of the Traffic Management Units (central/local level)			X	PE of SR in cooperation with MoTC	Project management	Fully operational Traffic management system	tbd

[42] Consultants estimations is 8000EUR/km/Year

Action N.	Measure	Specific Objective	Mode	Definition	Period			Responsible Institution	Instruments	indicator	Assessed Budget (mill. euro)
					S	M	L				
88	OSM 18	3.2	UR	Improving urban transport planning through preparation of Sustainable Urban Mobility Plans (SUMP) for each bigger city in the country with more than 50.000 inhabitants.		X		Municipalities in cooperation with MoTC	Project management, tendering procedures	SUMP's prepared	3,00
89	OSM 19	3.1	All	Preparing a comprehensive study for quantifying impacts of climate change, climate variability and extreme weather events on infrastructure and services (network resilience)		X		MoTC	Project management, tendering procedures	Study prepared	1,50
90	OSM 19	3.1	All	Educational and public awareness campaigns about the environmental aspects of the transport sector	X			MoTC	Promotion/ Event management	Campaigns/ education realized	0,05
91	OSM 19	3.1	RO/ UR	Financial support – incentives for environmental friendly private vehicles			X	ME in cooperation with MoTC	Financial Instruments	Number of vehicles supported	tbd
92	OSM 20	3.2	UR	Financial support – incentives for passenger tickets for use of public transportation in urban areas		X		Municipalities in cooperation with MoTC	Financial instruments Project Management	Financial support realized	0,50
93	OSM 22	4.1	RW	Budget support for renewal of rail transport vehicles to ensure rail transport safety		X		MoTC	Financial instruments Project management	Percentage of renewed wagons	40,00
94	OSM 22	4.1	RW	Implementation EU-TSI in the national regulative for railway transport safety			X	PE MR-I in cooperation with MoTC	Legislative Interventions	Legislative adopted	/
95	OSM 24	4.1	WA	Increasing the capacities for maintaining high levels of safety and security of waterway lake transport, notably security of vessels, ships and operations		X		MoTC	Capacity building measures	Control capacity increased	/

Action N.	Measure	Specific Objective	Mode	Definition	Period			Responsible Institution	Instruments	indicator	Assessed Budget (mill. euro)
					S	M	L				
96	OSM 25	2.3/4.2	RO	Developing of operational road safety entity to improve coordination and cooperation between key road safety stakeholders and implementation of proposed road safety measures	X			MoTC	Legislative Interventions	Road safety entity fully functional	/
97	OSM 25	2.3/4.2	RO	Increasing inspection competences for control of road vehicle technical inspection stations	X			ME in cooperation with MoTC	Legislative Interventions	Regulative adopted	/
98	OSM 27	2.3/4.2	RO	Building national capacities for Road Safety Audit (education modules and certification)	X			PE of SR in cooperation with MoTC	Legislative interventions, project management	Education modules and certification realized	0,10
99	OSM 28	4.2	RO	Improvement of police control equipment with new mobile and fixed radars installed near to the road network points with a considerable traffic accidents		X		MoI	Project management, tendering procedures	New equipment purchased	3,00
100	OSM 29	4.2	UR	Preparing campaigns and education for urban transport safety	X			Municipalities in cooperation with National Council for Road Transport Safety and MoTC	Promotion/ Event management	Campaigns and education realized	0,10
101	OSM 30	4.1/4.3	RW	Implementation of European Train Control System (ETCS) and Global System for Mobile Communications – Railway (GSM-R) along the railway network in the country			X	PE MR-I in cooperation with MoTC	Project management, tendering procedure	New equipment installed	60,00
102	OSM 30	4.3	Air	Providing new technologies for operation, infrastructure and equipment in aviation (GNSS)		X		M-NAV in cooperation with MoTC	Project management, tendering procedures	New technologies provided	2,00
103	OSM 30	4.3	WA	Providing new technologies for operation and management of lake transport		X		MoTC	Project management, tendering procedures	New technologies provided	0,20

Action N.	Measure	Specific Objective	Mode	Definition	Period			Responsible Institution	Instruments	indicator	Assessed Budget (mill. euro)
					S	M	L				
104	OSM 30	4.3	All	Development of National Intelligent Transport Systems (ITS) Strategy with Action plan	X			MoTC	Project Management, tendering procedures	National ITS Strategy prepared	1,00
								TOTAL			**4.191,08**

LEGEND:

Action No: General numbering.

Measure: Actions has designations by the type of measure related. See the table of the related measure.

Specific objectives: The first number is General and the second is for the specific objectives. I.E. 3.2 Is for the third general and the second specific objective as part of its general objective.

Mode: ALL- all modes related; RO- road related; RW – rail related; Air – air related; UR – urban transport related; WA- inland water way related; MM- multy modal transport related.

Definition: The title and possible short description of the action.

Period: The period for expected finalisation of the related action. S- short/3 years; M- medium/6 years and L- long period/12 years and longer. This value is expected to be changed upon the revision considering the length of the period of the implementation of the strategy.

Responsible institution: The main institution responsible is mentioned. Even though there is very much possible to have other responsible institutions not mentioned in the table which the responsible institution need to coordinate with.

Instrument: The instrument for implementation of the action.

Indicator: Is the indicator upon which creations the action can be considered as realised.

Assessed budget: Considering that most of the projects are in different phase of planning and implementation this numbers can only be projections and it is expected to be re-evaluated and amended. Therefore for some of them it is stated **tbd** (to be decided) for later and for some there are no budged for which there is (/).