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PROPOSAL

TRANSPORT DEVELOPMENT STRATEGY IN THE REPUBLIC OF SLOVENIA

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LIST OF ABBREVIATIONS

AIS	Automatic Identification System on ships
AJPES	Agency of the Republic of Slovenia for Public Legal Records and Related Services
BA Corridor	Baltic-Adriatic Core Network Corridor
GDP	Gross domestic product
CETRA	Central European Transport Model
CNG	Compressed natural gas
DARS	Motorway Company in the Republic of Slovenia
VAT	Value added tax
NSP	National Spatial Plan
DRSC	Slovenian Roads Agency
EC	European Commission
ERTMS/ETCS	European Rail Traffic Management System/Train Control System that enables the interoperability of trains
ESPON	European Observation Network for Territorial Development and Cohesion
ERDF	European Regional Development Fund
EU	European Union
EURO	European emission standardsfor vehicles
PSO	Public service obligation
HBEFA	Handbook Emission Factors for Road Transport
CEF	Connecting Europe Facility (Regulation EU No. 1316/2013)
ITS/TMS	Intelligent Transport Systems/Transport Management Systems
JAPTI	Public Agency for Entrepreneurship and Foreign Investments
PPT	Public Passenger Transport
PRI	Public railway infrastructure
CP	Cohesion policy
CF	Cohesion funds
LRIT	Long-range identification and tracking system of ships
MED Corridor	Mediterranean Core Network Corridor
MI	Ministry of the Interior
MESCS	Ministry of Education, Science, Culture and Sport
MInf	Ministry of Infrastructure
NAPA	North Adriatic Ports Association (Rijeka, Koper, Trieste, Venice)
OECD	Organisation for Economic Cooperation and Development
P+R	Park and Ride
AADT	Average Annual Daily Traffic
CEC	Civil engineering company
PRIMOS	National transport model (Slovenia)
RIS	River Information Services
RNE	RailNetEurope (Association of European railway infrastructure managers)
SafeSeaNet	Vessel traffic monitoring in EU waters
SESAR	European air traffic control infrastructure modernisation programme
SPSS	Spatial Planning Strategy of Slovenia
SORS	Statistical Office of the Republic of Slovenia
SŽ	Slovenske železnice – Slovenian Railways
TEN–T	Trans-European Transport Network
TEU	Twenty-foot equivalent unit (6.1 x 2.44 x 1.33–2.9 metres) used to describe the capacity of container ships
TRANS–TOOLS	Trans-European Transport Model
TSI	Technical Specifications for Interoperability of Railway Systems
IMAD	Institute of Macroeconomic Analysis and Development of the Republic of Slovenia
Official Gazette of the RS	Official Gazette of the Republic of Slovenia
SMA	Slovenian Maritime Administration
VISUM	Software for transport analyses, forecasts and GIS-based data management
GRS/Government of the Republic of Slovenia	The Government of the Republic of Slovenia
VTS	Vessel Traffic Service

PURPOSE

The purpose of the Transport Development Strategy in the Republic of Slovenia is:

- *to present the standpoints, needs and possibilities for the development of the key transport infrastructure in the Republic of Slovenia,*
- *to prepare a harmonised development programme for the key transport infrastructure in the Republic of Slovenia,*
- *to guarantee ex-ante conditionalities for drawing EU funds in the 2014–2020 financial period for transport infrastructure.*

LEGAL BASES

The legal bases for the preparation of the Strategy are:

- *Article 2 of the Government of the Republic of Slovenia Act (Official Gazette of RS, no. 24/05 – official consolidated text, 109/08, 38/10–ZUKN, 8/12, 21/13,47/13–ZDU–1G and 65/14), which stipulates that the Government shall determine, direct and coordinate the implementation of national policy in accordance with the Constitution, laws and other general legal acts of the National Assembly. To that end, it shall issue regulations and adopt the legal, political, economic, financial, organisational and other measures required in order to provide for the development of the state and the regulation of conditions within the competence of the state in all areas*.
- *Article 38 of the Public Administration Act (Official Gazette of the RS, Nos. 113/05–UPB4, 126/2007–ZUP–E, 48/09, 8/10–ZUP–G, 8/12–ZVRS–F and no. 21/12), which stipulates that the Ministry of Transport shall perform tasks in the departments of railway, air and maritime transport, road and inland waters transport, excluding road traffic safety control, and tasks in the departments of transport infrastructure and cableway installations.*

PREAMBLE

Pursuant to new systemic solutions, the Ministry competent for transport, which manages transport and public transport infrastructure, hereby proposes to adopt the Transport Development Strategy in the Republic of Slovenia.

1. STRATEGY STARTING POINTS

1.1. INTRODUCTION

After obtaining independence, the Republic of Slovenia intensively initiated the construction of the motorway cross on the pan-European Corridors V and X. There was also a great need to renovate the existing railway transport network. However, in railway infrastructure, only urgent investments were implemented, apart from some exceptions, i.e. mostly regular and investment maintenance, all to a limited extent. It was planned to begin the major cycle of investments in railway infrastructure after the completion of the motorway cross. This was also determined by the Resolution on the Transport Policy of the Republic of Slovenia from 2006 (Resolution on the Transport Policy of the Republic of Slovenia ReTPRS) (Intermodality: time for synergy), Official Gazette of RS, no. 58/06). Despite the fact that the motorway cross was constructed to a major extent, the investment cycle did not continue with investments in railway infrastructure. The economic and financial crisis was one of the reasons, as well as the absence of a comprehensive investment programme for transport infrastructure.

Therefore, at its 37th regular session on 15 November 2012, the Government of the Republic of Slovenia (hereinafter referred to as the GRS) issued under item 1.13 at the consideration of information in relation to the proposal for a Regulation on Union guidelines for the development of the trans-European transport network and the proposal for a Regulation establishing the Connecting Europe Facility, Decision no. 54948–24/2012/4, thereby ordering the Ministry of Infrastructure to prepare a harmonised plan of investments in transport infrastructure up to 2020, including a vision to 2030, and for a longer period of time only if this is in favour of the transparency of the integrity of investments, and that this information and discussion at the Government of the Republic of Slovenia should also be considered.

For this purpose, the Minister of Infrastructure, Samo Omerzel, in April 2013 appointed a working group for the preparation of the Resolution on the National Programme for the Development of Transport Infrastructure in the Republic of Slovenia until 2020 with a Vision to 2030 (hereinafter referred to as the Resolution).

The purpose of the Resolution is to:

- determine the comprehensive development of transport and transport infrastructure up to 2030 (and longer, if this is necessary for the integrity of the task),
- facilitate regular and equal financing of transport infrastructure,
- facilitate the basis for drawing EU funds in the financial perspective: 2014–2020 (so-called ex-ante conditionalities).

The latter purpose expanded the field of the Resolution with a consideration of the primary purpose, since it was necessary to include public passenger transport, intelligent transport systems (telematic applications), logistics and infrastructure for alternative fuels. Therefore, this did not exclusively involve a national programme for infrastructure, but an integral approach to transport, which can ensure greater synergies in achieving the goals of the transport and spatial policy of the state, as well as other policies affected by transport (environment), or is of key importance to them (economy).

Facilitating ex-ante conditionalities for drawing EU funds became the priority in 2014 when working on the Resolution. EU representatives and their technical assistance demanded

that a document including general measures be drafted for this purpose, regardless of the finances needed for their realisation andeadlines.
Therefore, it was decided that the preparation and adoption of the Resolution would be divided into two phases, and that firstly the Transport Development Strategy in the Republic of Slovenia would be adopted, followed by the Resolution on Transport Development in the Republic of Slovenia, which will represent the operational implementation of the Strategy with a priority order of implementation of investments, financial resources, deadlines and responsibles. Based on this we therefore propose that the Government of the Republic of Slovenia adopt the Transport Development Strategy in the Republic of Slovenia (hereinafter referred to as the Strategy).

The document of the Strategy was structured as follows:

- The first chapter describes all starting points which needed to be considered in the preparation of the Strategy: European and national legislation, analysis in the field of transport development considering sectorial legislation and some relevant studies that were used to make a more simple determination of measures.
- The second chapter describes the organisation of the Ministry responsible for transport in the Republic of Slovenia and its administrative capacity for implementing tasks in the field of transport.
- The third chapter presents the transport model, the analysis of traffic flows in 2030 and their assessment, including proposed measures. The existence of the national transport model was one of the key conditions for confirming the Strategy as the applicable document for fulfiling ex-ante conditionalities for using EU funds.
- This is followed by a SWOT analysis of transport in the Republic of Slovenia as a whole and for individual sectors.
- The fifth chapter determines the vision of transport development in the Republic of Slovenia, general objectives (what we want to achieve in this field) and the indicators used to monitor the realisation of objectives.
- This is followed by the determination of data processing areas. It needs to be emphasised that the areas presented in the Strategy present only traffic-gravitational areas, where closed-area transport work is implemented.
- The seventh chapter determined problems, specific objectives (what we must achieve with measures) and measures at the general level.
- The final chapter includes a brief introduction to the strategice environmental assessment (hereinafter referred to as the SEA). The latter is the second key requirement for fulfilment of ex-ante conditionalities for using EU funds. An environmental report on SEA can be found in the Annex and was prepared on the basis of measures determined in this Strategy.

1.2. SLOVENIA'S GEOGRAPHICAL POSITION AND SOME KEY CHALLENGES

Its geographical location and historical circumstances make Slovenia an intensively transport and transit area and the crossroad of two major pan-European corridors (Figure 1), i.e. corridors V and X, which were determined at the European conference of transport ministers on Crete in 1994 and in Helsinki in 1997 (CEMT – Conférence Européenne des Ministres de Transport). This division is mentioned because it is most familiar in Slovenia. The corridors run as follows (Figure 1):

- Corridor V: Venice – Trieste/Koper – Ljubljana – Maribor – Budapest – Uzhhorod – Lviv – Kiev,

- Corridor X: Salzburg – Ljubljana – Zagreb – Belgrade – Niš – Skopje – Veles – Thessaloniki; the corridor Xa also runs across Slovenia, i.e. Graz – Maribor – Zagreb.

Each of these trans-European corridors has its own branches, i.e.:

- on corridor V:
  - Branch A: Bratislava – Žilina – Košice – Uzhhorod,
  - Branch B: Rijeka – Zagreb – Budapest,
  - Branch C: Ploče – Sarajevo – Osijek – Budapest.
- Besides the mentioned Xa branch, the corridor X also includes:
  - Branch B: Budapest – Novi Sad – Belgrade,
  - Branch C: Niš – Sofia – Plovdiv – Dimitrovgrad – Istanbul (via corridor IV),
  - Branch D: Veles – Prilep – Bitola – Florina – Igoumenitsa.

Some of the branches on individual corridors compete, e.g. the basic route of corridor V and its branches B and C, the basic route of pan-European corridor X and its branches A and B.

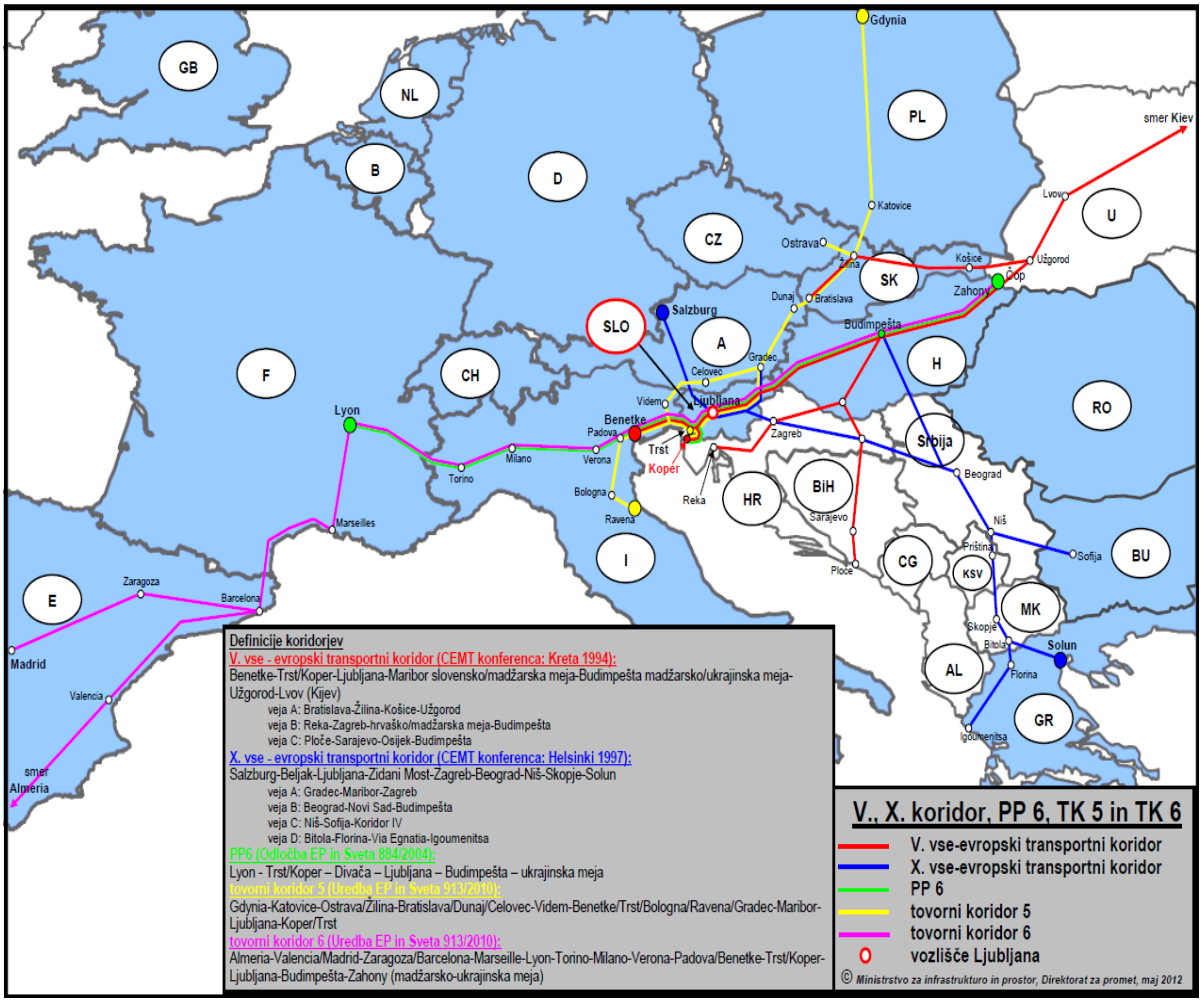


Figure 1 Routes of pan-European Corridors V and X (Source: MInf)

In Slovenia, the trans-European network or TEN-T, which is divided into a comprehensive and core network, runs on the same routes as the aforementioned pan-European corridors.

For the requirements of the implementation of the core TEN-T network in the financial perspective from 2014 to 2020, the European Commission formed, and the Council of Europe and the European Parliament harmonised and adopted, the corridors of the Core Network Corridors. In these corridors, Slovenia is included in the so-called Mediterranean and Baltic-Adriatic corridors. Both run across Slovenia in the SW-NE direction, whereas, on the western side, the first continues from Pragersko to Hungary or from Zidani most to Croatia, the second one across Šentilj to Austria. The TEN-T network and core network corridors are explained in greater detail in the following chapters.

In the recent economic crisis, traffic flows have declined by approximately 20%. In strategic terms, the crisis period must be used to prepare transport infrastructure for the period after the crisis, when increases in traffic flows follow in correlation with economic growth, which will be simultaneously stimulated by traffic. Transport and economic growth are known to be related. From a developmental aspect, transport infrastructure enables people access to functional places (jobs, services) and stimulates the development of economic activities. Jobs and services of public importance are mainly concentrated in cities – economic centres. Infrastructural systems support their integration into European economic currents and contribute to the harmonised development of areas, thus enabling the mutual augmentation of functions of rural and urban areas.

The Resolution on the Transport Policy of the Republic of Slovenia adopted in 2006 indicates the significant trends in the development of transport industry and modified values in planning transport policy. Along with traditional infrastructural solutions, the so-called co-modal theory of transport planning which in combination with sustainable policy presents new challenges for transport policy planners in Slovenia.

This document includes four areas of classic transport infrastructure: roads, railways, and the maritime and aviation industries, as well as sustainable population mobility planning (cycling, PPT) and economic supply (transport logistics, intermodal hubs etc.). Logistical centres should be located in appropriate locations, because rationality and cost-efficiency depends on the appropriate comprehension of needs (economy) and the appropriate localisation of junctions along major Slovenian transport corridors.

The following transition in is the mindset is also the realisation of the internalisation of external costs. The user pays for all costs incurred. From a national standpoint, emissions (in Slovenia mostly due to natural conditions, especially PM_{10} particles), accidents, noise, congestion and wear of road surfaces cause costs that need to be charged to decision-makers at contracting authorities or entities who pay for transport (logistics companies, carriers, buyers or suppliers). For this purpose, an electronic tolling system must be implemented.

Investments in transport infrastructure demand substantial funds, which the Republic of Slovenia cannot entirely realise based on its own budgetary funds. Thus, interested private partners must be sought for projects and included in project preparation and management processes at an early stage. European funds and Slovenian budgetary funds must also be acquired and utilised to the maximum extent possible.

In the past twenty years, the Republic of Slovenia has adopted some strategic documents in the field of transport policy, including the Resolution on the Transport Policy of the RS, Spatial Development Strategy of Slovenia, Development Strategy of Slovenia and partial national programmes as executive regulations. These documents represent one of the bases or starting points of the Resolution on the National Transport and Transport Infrastructure Development Programme in the Republic of Slovenia. In order to understand the consequences of guidelines or policies in this field so far, we need to present the development of traffic flows by individual types of transport as well.

1.3. TRANSPORT IN STRATEGIC DOCUMENTATION

1.3.1. Transport in the light of the Resolution on the Transport Policy of the Republic of Slovenia (Official Gazette of the RS, no. 35/02 and 60/04).

The National Assembly of the Republic of Slovenia adopted the Resolution on Transport Policy in 2006, which in a contemporary, concise and simple way determined the fundamental guidelines for the future of transport in the Republic of Slovenia by defining the standpoints, vision, goals and measures. The standpoints show the situation analysis by the realised partial policies of past years in the field of passenger and cargo transport, infrastructure, safety and security, as well as environment protection, which conditioned the situation in this area which had existed until that time. Transport policy bases on mobility, accessibility, environment protection, safety and security, economic development, the optimal utilisation of sources, intermodality/interoperability and balance among transport systems.

Transport policy planners fully considered the principles of sustainable development. They consistently determined the objectives and measures of transport policy in all the complexity of sustainable development, which equally, simultaneously and independently consider all three dimensions of sustainable development: the economy, society and the environment.

The main objectives of transport policy are: achieving a socially optimal situation referring to the transport sector; increasing transport safety and security; efficient use of energy and clean environment; increasing the scope and quality of public passenger road and rail transport; harmonised operations of the entire transport system; establishing the architecture of an intelligent transport system by enforcing regional, national and European specificities, guidelines and interests; ensuring the necessary transport infrastructure for land, maritime and air transport that follows the principles of sustainable and harmonised regional development; ensuring reliable, safe, price-efficient, competitive and environmentally-friendly transport in cargo and passenger transport; optimum utilisation of available sources; establishing the functioning of market economy effects; selling state-owned shares and deregulation where private services providers can ensure a more competitive and better quality service according to market economy principles, whereby the level of safety may not be reduced; accurate guiding of fiscal measures to facilitate those services which cannot be ensured according to market economics principles.

Public interest in the field of ensuring population mobility is connected to social and ecological factors. The Resolution on Transport Policy enables the planning of implementing project documentation in relation to sustainable development: national programmes and special laws.

The Resolution also states that the management, organisation and financing of public passenger transport will have to be combined in one place. Passengers will have to be educated to use public transport and to use passenger transport in an intermodal manner.

The supply of companies must also be based on sustainable development. Therefore, transport policy measures plan the setting up of a system for charging usage fees for infrastructure based on market conditions.

The state will stimulate research and development in the transport sector, in the economy and education; thus it will strengthen the scope and power of the transport sector, as well as create jobs.

The general measures of transport policy in the Resolution also provide the preparation of a comprehensive transport model with appropriate tools for system support, the preparation of a state developmental plan on the optimal harmonisation of the transport system and the development of transport infrastructure, which is a condition for the uniform and synchronous operations of the system. Emphasis is put on guaranteeing the appropriate infrastructure in the field of public passenger transport, railways, state roads and logistics centres, as well as ports and airports. From the economic aspect, private capital will be engaged in the development of transport infrastructure where the desired results could be obtained by private initiative and, as a result, relieve public finance. Fiscal measures used by the state to stimulate the foundation of comprehensive logistical solutions and a uniform public passenger transport system are the state's answer to transport carrier issues.

From the ecological standpoint, the entities implementing the transport policy must enable the development of new transport technologies which will be less burdening on the environment, and stimulate the use of more energy-efficient and ecologically-friendly vehicles.
Along with modified social habits and economic dynamics in Slovenia, appropriate education, notification and marketing are necessary in order to raise people’s awareness of the significance of the transport system, its operations and the optimum use of transport infrastructure.

Actual development in this area was slightly different from the ambitious objectives of the Resolution concerning the sustainable development of transport and environmentally friendly transport modes. After gaining independence, Slovenia only managed to construct a direct railway connection with Hungary in the field of railway infrastructure development. This project has proven exceptionally important since both countries joined the EU, since the route has become more competitive. Furthermore, 20 years ago we witnessed the redirection of traffic flows to the fifth railway corridor, while traffic on the tenth corridor is slowly coming to life mostly due to non-harmonised railway management in this area. The

current situation and trafficability have been preserved on other parts of the railway infrastructure.

The construction and maintenance of railway infrastructure, along with organisational and technological aspects, is also a key success factor in a more open, marketable and competitive space, where railways which acquire almost 60 per cent of cargo via the port of Koper can now be found. The port of Koper has constantly increased transshipment in the past decades, and is also a key traffic hub of European importance.

In the field of state roads in the past twenty years, Slovenia has prioritised the construction of roads for long-distance traffic, i.e. motorways in the trans-European road network, and expressways. The remaining network of state roads, including main and regional roads, was mostly maintained and preserved; by primarily eliminating bottlenecks, the goal was to increase traffic capacity and safety. This development of the national road infrastructure enabled the accelerated development of areas along the motorway network, but the connectivity and access of other areas to the motorway system did not improve in this period; the general situation of the existing national road network, main and regional roads categories even deteriorated. This situation limits the harmonious regional development of areas in Slovenia which are not situated near the motorway network. Due to poor access and higher transport costs, these areas are becoming non-competitive in terms of location, even if they have other resources needed for development (cheaper land, qualified workforce etc.).

We must not forget about Slovenia's airports and navigation air transport services, which contribute significantly to the development of mostly passenger but also cargo transport.

Progress in the sense of combining carriers and modernising public passenger transport has only just begun.

If such a policy, i.e. stimulating road transport, continues, the results will not follow the objectives of the Resolution on Transport Policy. The figure below shows forecast traffic flows on motorways for 2030 and exceeding the AADT.

Table 1 No. of vehicles/year on individual motorway sections in the Republic of Slovenia in 2009 and 2030

seq. no.	section	2009			2030		
		freight transport – no. of trucks	passenger transport – no. of passenger vehicles	total vehicles	freight transport – no. of trucks	passenger transport – no. of passenger vehicles	total vehicles
1.	Beltinci <--> Pince / Tornyiszentmiklos	1,340,000	1,533,000	2,873,000	2,152,656	2,462,703	4,615,359
2.	Divača <--> Koper	1,330,000	6,480,575	7,810,575	2,136,592	10,410,784	12,547,376
3.	Draženci <--> Donji Macelj (brd.) / Gruškovje	311,345	8,183	319,528	460,995	12,090	473,085
4.	Fernetiči / Trieste <--> Divača	1,660,000	3,200,685	4,860,685	2,666,723	5,141,772	7,808,495
5.	Hrastje <--> Lešnica	1,200,000	5,845,475	7,045,475	1,927,752	9,390,521	11,318,273
6.	Karavanke <--> Vrba	790,000	2,938,250	3,728,250	1,269,103	4,720,181	5,989,284
7.	Kronovo <--> Obrežje / Bregana (brd.)	820,000	3,970,105	4,790,105	1,317,297	6,377,815	7,695,112

seq.	section	2009			2030		
8.	Lešnica <--> Kronovo	1,230,000	5,657,500	6,887,500	1,975,946	9,088,547	11,064,493
9.	Ljubljana Koseze <--> Ljubljana Kozarje	4,690,000	22,734,025	27,424,025	7,534,297	36,521,300	44,055,597
10.	Ljubljana Kozarje <--> Ljubljana Malence	3,850,000	18,625,220	22,475,220	6,184,871	29,920,669	36,105,540
11.	Ljubljana Kozarje <--> Postojna	4,100,000	15,680,035	19,780,035	6,586,486	25,189,348	31,775,834
12.	Ljubljana Malence <--> Pluska	1,900,000	11,107,680	13,007,680	3,052,274	17,844,043	20,896,317
13.	Ljubljana Šentvid <--> Ljubljana Koseze	1,820,000	11,834,760	13,654,760	2,923,757	19,012,068	21,935,825
14.	Maribor Pesnica <--> Maribor Slivnica	2,500,000	6,908,355	9,408,355	4,016,150	11,097,995	15,114,145
15.	Maribor Pesnica <--> Vučja vas	2,010,000	3,559,115	5,569,115	3,228,984	5,717,576	8,946,560
16.	Maribor Slivnica <--> Draženci	890,000	4,599,730	5,489,730	1,429,749	7,389,282	8,819,031
17.	Maribor Slivnica <--> Ljubljana Malence	3,380,000	11,021,540	14,401,540	5,429,835	17,705,662	23,135,497
18.	Pluska <--> Hrastje	1,226,400	6,548,100	7,774,500	1,970,162	10,519,260	12,489,422
19.	Podtabor <--> Ljubljana Šentvid	1,400,000	12,910,415	14,310,415	2,249,044	20,740,064	22,989,108
20.	Postojna <--> Divača	2,640,000	8,215,785	10,855,785	4,241,054	13,198,329	17,439,383
21.	Postojna <--> Rupa (brd.) / Jelšane	111,325	5,520	116,845	363,905	14,390	378,295
22.	Šentilj <--> Maribor Pesnica	1,200,000	3,984,340	5,184,340	1,927,752	6,400,683	8,328,435
23.	Vrba <--> Podtabor	1,220,000	8,077,815	9,297,815	1,959,881	12,976,686	14,936,567
24.	Vučja vas <--> Beltinci	1,710,000	2,741,150	4,451,150	2,747,046	4,403,548	7,150,594

Source: MInf, within the scope of data sent to TENtec portal of the European Commission

One of the key guidelines of the Resolution on Transport Policy of the Republic of Slovenia is the transition to environmentally friendly forms of transport, especially rail; however, this transition should be well designed. The limit capacity for motorways is 65,000 AADT (average annual traffic per day) or 23,725,000 vehicles per year. When traffic approaches the limit values, it needs to be demotivated and redirected. The forecast of traffic flows on motorw modes of transportation.

The table above shows that all motorway sections to Ljubljana and the entire corridor V would present bottlenecks in 2030. Therefore, railway cargo transport and public passenger transport will have to be stimulated on these sections.

The railway network in the Republic of Slovenia will have to be modernised for this purpose, since its potential would be enhanced, i.e. by increasing freight transport and passenger transport. Chapter 1.9 shows how the corridors that run across Slovenia have advantages over competitive corridors. Therefore, we need to illustrate the potential of railways in order to argue the applicability of guidelines of Slovenia's transport policy if modernised Slovenian railway corridors were comparable to competing corridors. This is shown in Table 2.

Table 2 Quantity of freight (t) and no. of passengers per year on individual railway sections in the Republic of Slovenia in 2009 and 2030

section	2009	2030	% growth 2009/2030

section	2009		2030		% growth 2009/2030	
	no. of passengers/year	tons of freight /year	no. of passengers/year	tons of freight /year	passengers/year	freight /year
Pragersko – Ormož	616,258	2,338,394	3,541,595	8,583,340	575%	367%
Divača – Koper	261,511	7,815,977	692,770	18,915,402	265%	242%
Divača – Pivka	388,185	10,049,858	1,991,440	22,356,250	513%	222%
Divača – Sežana	229,813	2,987,066	359,890	10,667,125	157%	357%
Dobovo – Krško	540,966	2,576,400	2,756,480	13,692,975	510%	531%
Border with Croatia – Ilirska Bistrica – Pivka	53,798	434,310	76,852	940,256	143%	216%
Jesenice – Ljubljana	1,996,042	3,793,732	3,229,155	13,141,095	162%	346%
Krško – Zidani Most	1,124,900	2,744,400	3,329,530	13,734,585	296%	500%
Maribor – Pragersko	1,519,329	3,238,000	5,292,500	14,942,005	348%	461%
Ormož – Središče ob Dravi (border with Croatia)	36,846	359,000	71,300	1,344,975	194%	375%
Pivka – Ljubljana	973,000	10,102,201	3,009,060	23,976,120	309%	237%
Hodoš – Ormož	401,975	2,897,730	3,102,500	7,935,830	772%	274%
Border with AT – Jesenice	373,960	3,406,000	1,095,000	13,252,055	293%	389%
Šentilj – Maribor	147,898	3,892,796	196,852	7,068,590	133%	182%
Sežana – border with IT	229,813	2,987,066	359,890	10,667,125	157%	357%
Zidani Most – Ljubljana	6,744,063	9,626,500	8,421,000	28,316,700	125%	294%
Zidani Most – Pragersko	1,882,474	5,267,348	5,319,145	14,942,005	283%	284%

Sources:

- for 2009 – MInf, within the scope of data sent to the TENtec portal of the European Commission
- for 2030: PNT and DRI study (2011) of the advantages of corridors running across Slovenia

The percentage of growth shows the potential of railway transport in the Republic of Slovenia. Here we have to make an essential assumption that the Slovenian railway network in 2030 will have been modernised and will be comparable with the competitive network on corridors V and X. If this is not the case, railway transport will stagnate, road transport will suffocate and become congested, as well as pollute the environment, thus causing damage to the economy and the population of Slovenia.

1.3.2. Spatial Development Strategy of Slovenia (Official Gazette of RS, no. 76/04)

The Spatial Development Strategy of Slovenia is the fundamental state document governing spatial development. It stipulates objectives and priorities and the global basis for the state's spatial development, including transport infrastructure; it provides developmental guidelines for settlements, infrastructure and the landscape as well as measures for its implementation. From the hierarchical aspect, it is the most important spatial document, to which all other spatial acts must be adjusted at the national and municipal levels, and this is verified in various procedures, in the case of the national spatial plan in the phase of considering an initiative for preparation and in the case of municipal spatial acts in the guidelines and opinions phase.

Slovenia's spatial development is based on a polycentric urban system comprised of a two-level structured network of centres that are of national importance (Ljubljana, Maribor, Koper, Celje, Murska Sobota, Velenje, Novo mesto, Kranj, Nova Gorica, Postojna, Ptuj and conurbations Jesenice-Radovljica, Sevnica-Brežice-Krško, Dravograd-Ravne na Koroškem-Slovenj Gradec, Trbovlje-Zagorje-Hrastnik) and centres that are of regional importance, and

to which, with appropriate distributions of functions, the networks of other centres are connected (centres of intermunicipal and local importance). Ljubljana, Koper and Maribor are centres that are important internationally, and this requires appropriate infrastructural connections with the international area.

From the developmental aspect of Slovenia, a comprehensive transport system has a key role in economic integration in the international space for connecting urban centres and other settlements, as well as the region, and for ensuring accessibility to workplaces and services for the population and the economy in a sustainable way that is also rational from the spatial aspect. In this way, transport infrastructure supports and establishes the conditions for developing centres in the determined polycentric urban system. Workplaces and services of public importance are mainly concentrated in cities, economic centres, due to which the need for planned infrastructure is based on, and the rank of the infrastructure is based on the role of a city or urban centre. The additional construction of infrastructure and establishment of appropriate services is required with the aim of connecting various transport sub-systems (hubs or terminals for passenger transport, transport terminals for combined traffic or logistics centres) to enable the efficient mobility of the population and goods. The development and construction of transport infrastructure on the European transport corridors V and X is important for economic integration in the international area, as well as the establishment of appropriate connections of international airports (especially Ljubljana) and the port of Koper with other transport subsystems and the improvement of cross-border transport connections. The system of internal connections is also important for regional development, since these connections consist of border and peripheral transport connections, which contribute to improving accessibility to lower level centres. The target accessibility from gravitational areas to functions in urban centres of higher rank (centres of national importance) is 45 minutes, while the target accessibility of gravitational areas of lower rank centres (centres of regional importance) is 30 minutes. If delays due to traffic congestion are not considered, the target values have already been achieved, but only regarding private vehicle traffic. More attention will have to be dedicated to accessibility by public transport in order to reduce the load on the environment caused by emissions and dust in urban centres.

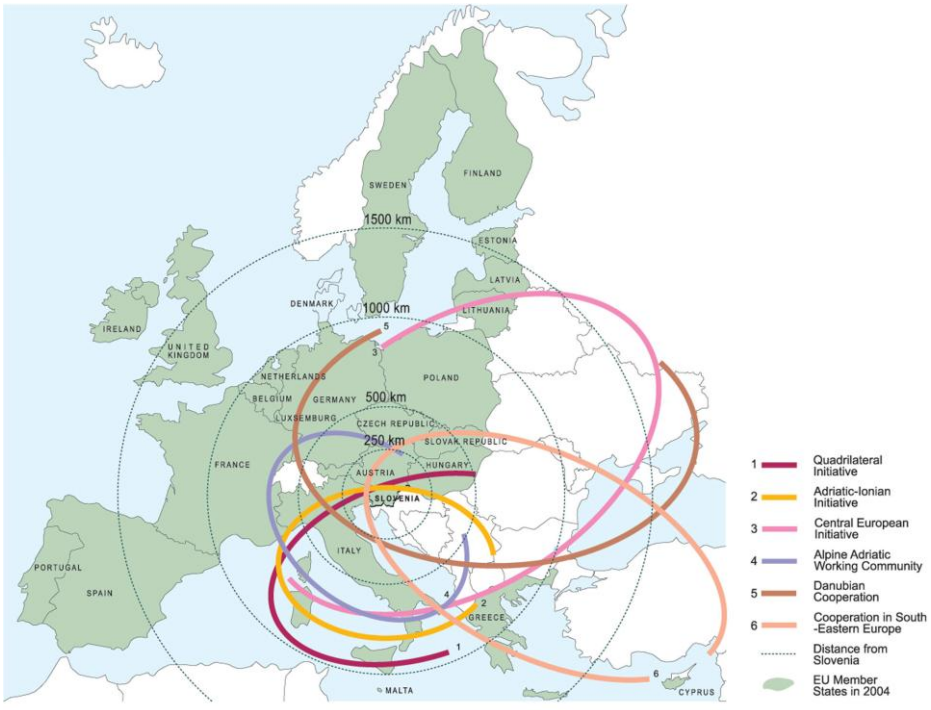
1.4. SITUATION ANALYSIS FROM THE ASPECT OF SPATIAL DEVELOPMENT

As a part of large European regions – Alpine, Mediterranean, Danube and Central European – Slovenia takes an active role and uses its geo-strategic position. Public transport infrastructure thus contributes to forming cross-border regions with neighbouring countries, which is important for the development of hilly and less accessible areas with numerous problems related to economic and demographic stagnation, as well as for the developmental cross-border connection of urban areas in the coastal region, Goriška, the lower Sava River and Štajerska regions.

Figure 2 presents areas of international cooperation within the scope of different initiatives and working groups, which interconnect countries with regard to common interests, and in which Slovenia is integrated due to the common resolution of developmental issues in the

area of spatial regulation, the economy, culture, social development, transport, environment and similar. The quadrilateral initiative merges Italy, Croatia, Hungary and Slovenia, within which the issues of transport connection, spatial regulation and the environment are resolved. Within the scope of the Adriatic Ionian Initiative, issues of spatial development along the Adriatic and Ionian seas are examined. The Central European Initiative considers issues of development in the political, economic, social, spatial and cultural areas. The Alps Adriatic Working Community considers matters related to spatial and environment regulation, the economy, culture, society, health care and social issues, agriculture and forestry. The Danube Cooperation Process involves countries along the river basin of the Danube River and resolves issues of development in relation to the environment and water protection. The Cooperation Process combines SE European countries and resolves issues that are significant for their future development.

In the territory of the Danube River region, cooperation among countries has been upgraded within the scope of the adopted Macro-regional Strategy for the Danube Region. The process of establishing the Adriatic Ionian macro-region is also under way, since it will strengthen the efforts of countries along the Adriatic Sea for the sustainable development of the sea, the coast and hinterland. In the Alps Region, Slovenia is included in the process of designing a potential macro-regional strategy for the Alps via the Alpine Convention, since it is a signatory. In all these areas, the issue of transport connections is a key issue - related to geographically specific features – whereas intermodality (river, land and maritime transport) for greater spatial efficiency and environmental sustainability are at the forefront.



Map No 1 SLOVENIA IN EUROPE AND INTERNATIONAL COOPERATION AREAS

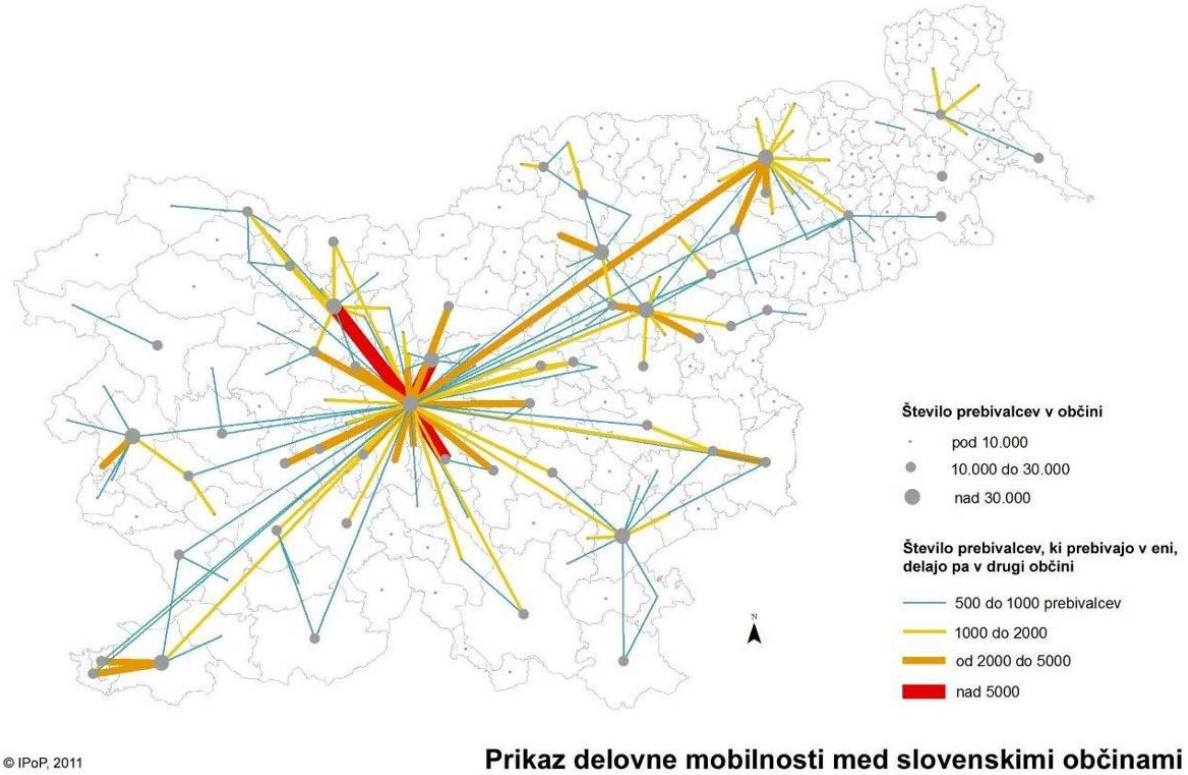
Source: MInf, SDSS, Official Gazette of the RS, No. 76/04

Note: Bulgaria and Romania are not marked as EU Member States, since they accessed the EU in 2007

Figure 2 Areas of international cooperation

1.4.1. Transport development for improved connections among settlement areas and regions

Jobs are also concentrated in areas with the highest population density, as well as activity and infrastructure density. Since the 1970s, suburbanisation has occurred, enabled by a high level of population motorisation and great mobility on the road network, which has increased in the last decade. Therefore, the trend of daily commuting from suburbanised areas to major cities (employment centres) is also characteristic of Slovenia. Daily migration in the past ten years has markedly increased in terms of the number of daily commuters, and the areas of functional regions of major centres have increased, too, while the role of Ljubljana as the major employment centre is particularly notable. Other large employment centres which also attract numerous commuters are Maribor, Celje, Kranj, Novo mesto, Koper, Nova Gorica with Šempeter, Velenje, Šoštanj, Krško and Brežice. Daily commuter flows more than doubled from 1995 to 2005; in the past ten years there has been a slight increase. Daily migrations are especially common in highway cross directions. The increase in daily migrations away from large centres to nearby municipalities has also been observed, since some rural municipalities have managed to retain more jobs in those areas. (Figure 3) Although the goal of attracting investors and creating jobs was to employ people from these municipalities, new jobs have led to additional daily commuting, and the population in these municipalities is still connected to urban centres outside their municipalities, thus creating the need for mobility.

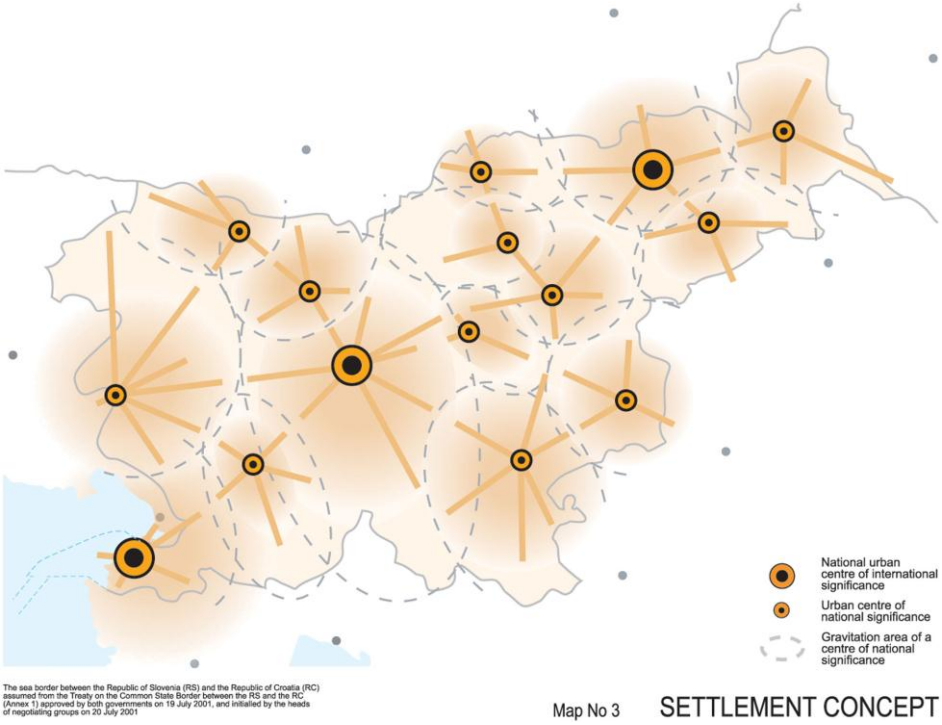


Source: Ministry of the Environment and Spatial Planning, Institute for Spatial Policies, 2011: How the research of the ESPON programme can support development planning in Slovenia, Interstrat

Figure 3 Presentation of daily migrations – the number of people who reside in one but work in another municipality

The dispersed development of low-density settlements on the fringes of cities is closely connected with patterns of daily migration based on car-dependence, thus creating higher emissions of substances and noise into the environment and causing greater dependence on energy resources. From the aspect of increasing energy prices, ensuring efficient public transport in compact urban areas will represent a great advantage or saving.

The rising trend in traffic flows in road transport is continuing. This increase is the result of suburbanisation and the distribution of jobs. Additional journeys and traffic flows are also caused by movements of services, trade and business activities to city fringes. Motorway construction, which enabled better mobility in Slovenia, thus also significantly increased the daily mobility of the work force, students and pupils and affected the construction of housing, since this is more common along motorways, especially along the Primorska and Dolenjska motorway sections.



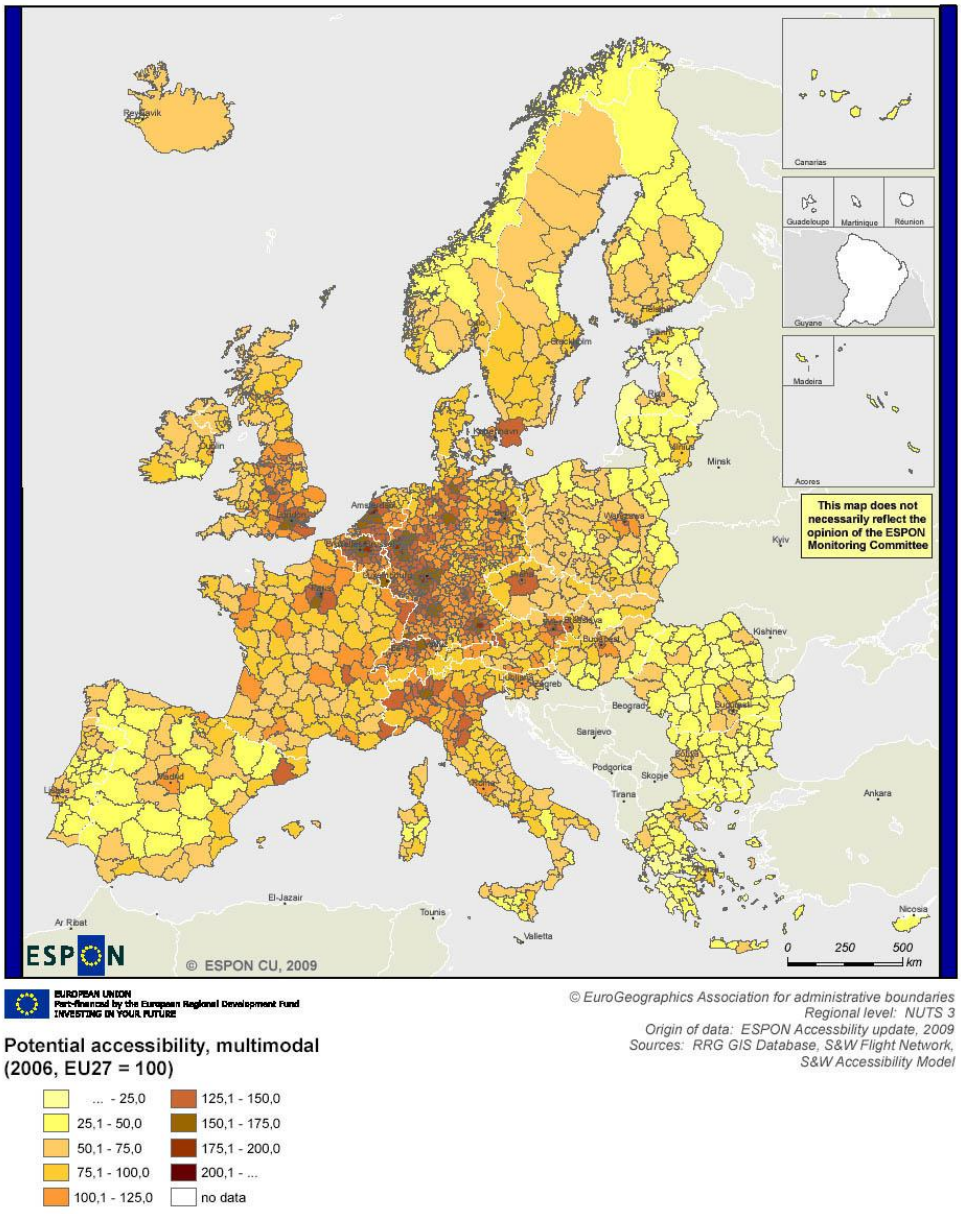
Source: MInf, SDSS, Official Gazette of the RS, no. 76/04

Figure 4 Urban centres of national and international importance with gravitational areas

Transport is based on the use of passenger vehicles; public passenger transport is underdeveloped and inefficient. The inefficiency of public passenger transport arises from the poor level of organisation and also from settlement structure, which, with numerous small and scattered settlements, makes organising public passenger transport problematic. This means that the improvement of public transport cannot be tackled in the same way throughout the vountry, but would require various measures. We should also emphasise issues related to the absence of infrastructure for sustainable mobility – a network of cycling routes (within and between settlements), pavements, bus stations, public passenger transport lanes etc.

1.4.2. Accessibility and interconnection of transport systems

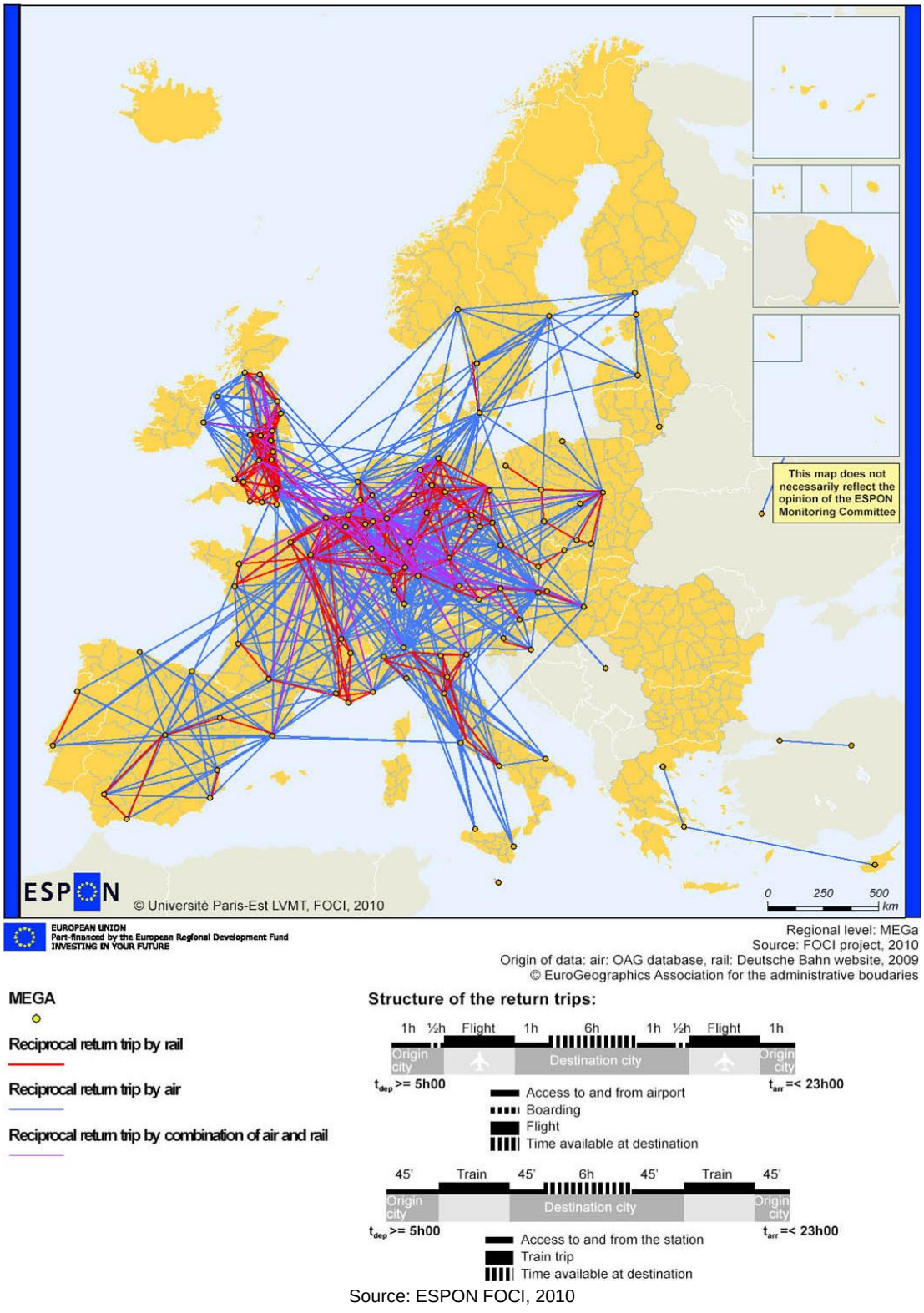
Physical integration into the wider area and accessibility are of key importance for developing all types of connections, including business, trade and leisure connections. Regions with better accessibility are often more successful and economically competitive. Air transport accessibility is also very important. Therefore, cities and regions with major airports are characterised by high multi-modal accessibility (Figure 5). Slovenia cannot compare with these; however, accessibility to Gorenjska and the central Slovenian region is much better than to other regions mostly due to the public airport. Since Slovenia cannot boast high accessibility by rail, connections via the Jože Pučnik Ljubljana airport play an important role in the accessibility of the whole country.



Source: ESPON, Territorial Dynamics in Europe, November 2009

Figure 5 Potential multi-modal accessibility (accessibility with multiple transport means) in the ESPON countries, 2006

From the international aspect, accessibility by a combination of public transport (e.g. plane – bus or train etc.), which is quite insufficient or does not exist in Slovenia, is very important for the accessibility of other centres (which do not have public international airports).



Source: ESPON FOCI, 2010

Figure 6 Network of cities involving single-day business trips

Figure 6 shows the possibilities of one-day business trips, where, after reaching their destination, the passenger has six hours available if they depart at 5 am and arrive home before 11 pm on the same day. The figure presents return trips by train (red lines) and plane (blue lines). A one-day return business trip by train from Ljubljana as the only metropolitan area in Slovenia is possible only to Zagreb; such connections are available by plane, i.e. to Vienna, Munich, Frankfurt and Brussels.
Slovenia's poor rail connections are of some concern, mainly because Slovenia has such a central role. Poor accessibility is due underinvestment in railway infrastructure. Slovenia is also insufficiently connected via air routes or rail in south-easterly directions, towards Italy and further on towards the west Mediterranean. Regarding air transport, Slovenia has quite good connections with hubs in Central and Western Europe; the problem involves connections to other forms of public transport and, consequently, the accessibility of individual urban centres or regions in the country.

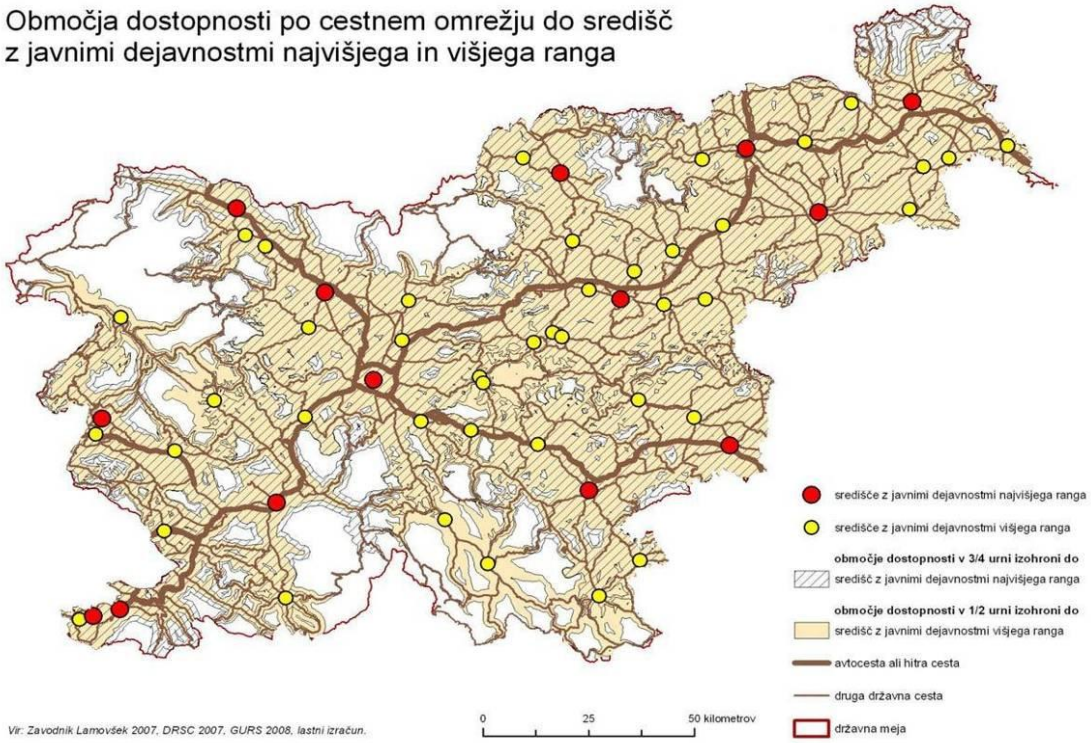
1.4.3. Accessibility inside Slovenia

The construction of the motorway and expressway network, along with good road and transport connections with neighbouring countries, has significantly improved connections between regions and accessibility by private motor in Slovenia. General activities (education, health care, administration) are concentrated in major urban centres, which are, given their functional application, distributed among centres of the highest and high levels (Figure 7). These centres are quite accessible to the majority of the population (although not regarding accessibility by public passenger transport), which, besides a developed road network and high level of population motorisation, is the consequence of efficient infrastructure, including such functions. Weaker accessibility is noted mostly in the Posočje, Cerkljansko, Kočevsko and Bela krajina regions.

Although travel time (or distance) on a motorway or expressway is an important factor, access time to the nearest connection to a motorway or expressway is also very important. The latter 'opens' the countryside to the wider territory of Slovenia, and also the labour market, educational possibilities, shopping etc. Figure 8 shows access time to connections to motorways or expressways by considering the situation after the construction of the 3rd development axis.

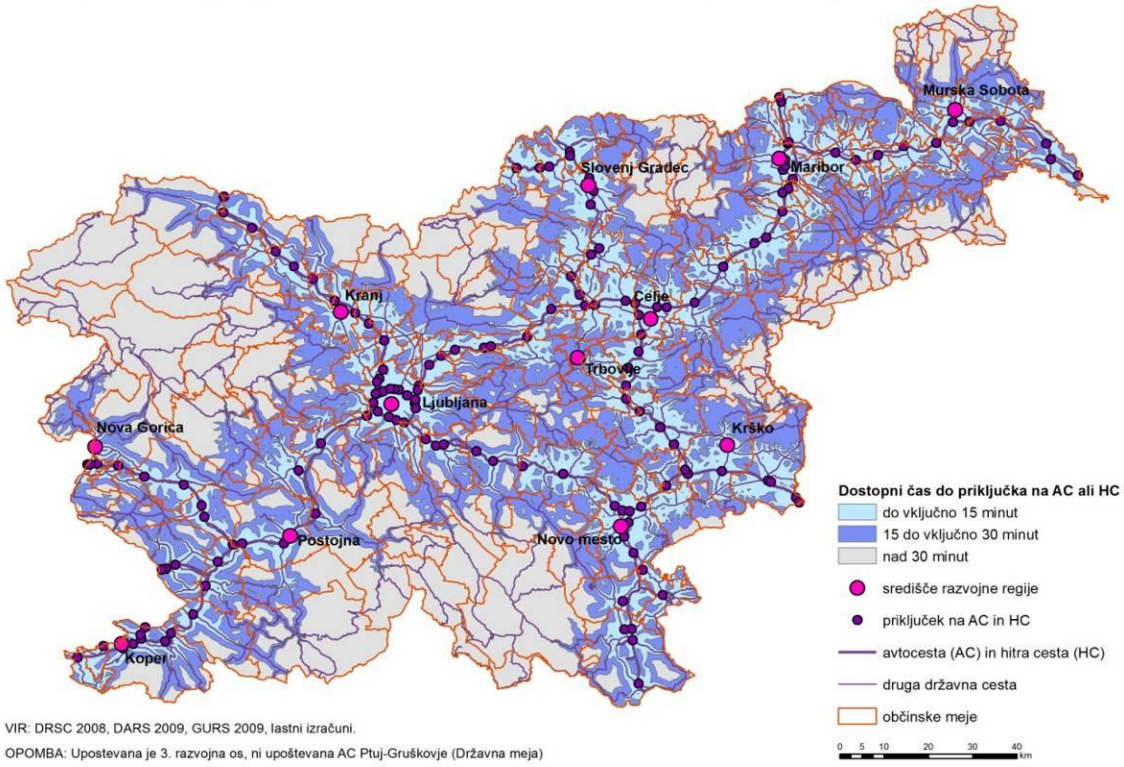
In comparison with Figure 7 (accessibility to functions), Figure 8 shows that the 30-minute access to functions in Slovenia will not significantly improve; however, the time taken to access connections to the motorway will shorten, thus increasing the attraction of the highest ranked centres for daily migration, since the majority of the population will be able to reach a connection to a motorway or expressway within 15 minutes, i.e. along the planned route of the 3rd development axis after it is constructed. Along the main urbanisation corridors, access by private motor vehicle is possible in 30 to 45 minutes, i.e. to regional or major employment centres, which is a very good accessibility rate. The majority of the population also has 30-minute access to a connection to a motorway, which means 45 to 60 minutes to a major regional centre. The exceptions where the time to access connections to motorways or expressways is longer than 30 minutes are: Kočevsko,

Pokolpje, Kozjansko, Ribniško and Lovrenško Pohorje, the main part of Kozjak, Goričko, the southern part of Prlekija, the upper Soča region to Kanal, Cerkljansko, Baška grapa, the western part of Škofjeloško hribovje, Bloška planota, Loška dolina (access will improve for Haloze after the construction of the Draženci–Gruškovje motorway section).



Source: Pogačnik and associates, 2010: "Analysis of developmental sources and scenarios for functional regions modelling, CRP 2006-2013, 2nd Phase Report, FGG

Figure 7 Road network accessibility areas to centres with public activities of the highest and high levels



Source: DRSC 2008, DARS 2009, GURS 2009, own calculations
NOTE: The 3rd development axis has been taken into account, while the Ptuj–Gruškovje (state border) MW has not.

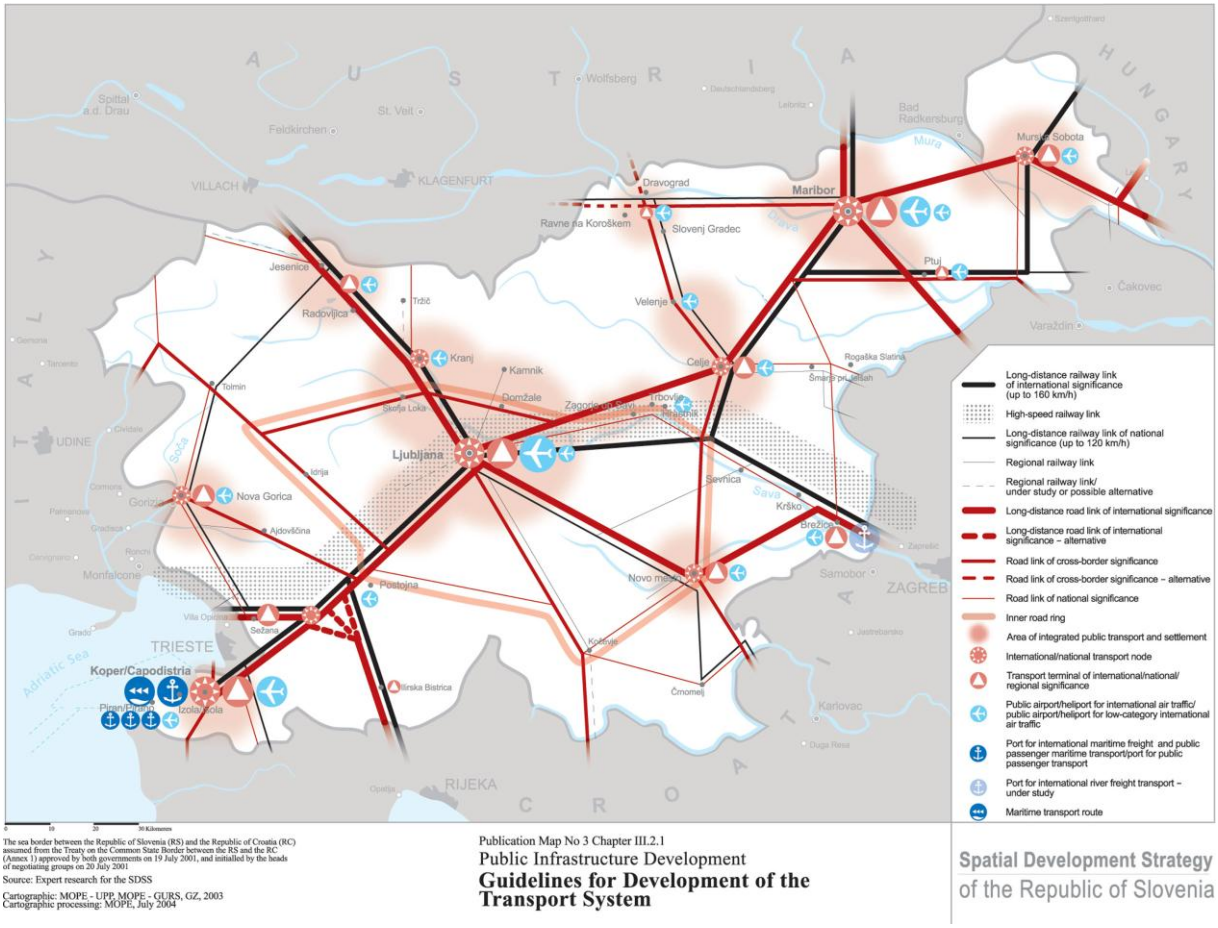
Figure 8 Accessibility to connections to motorways or expressways (year 2025)

Modernising the roads in the direction of transport axes would improve the accessibility of the above-mentioned areas, as well as improving railway connections. Alternative means of access should be considered for these areas, especially regarding access to health-care services (hospitals), shopping centres and high-school education. The problems of accessing activities of general importance must be additionally highlighted from the standpoint of the social exclusion of vulnerable social groups, i.e. young people, the elderly or people with low incomes.

Due to geographic features, diverse transport accessibility and diverse economic growth, the differences between weak and developed areas in Slovenia are increasing. Despite a strategically appropriate transport position, there are no modern terminals for combined freight transport. The transport supply of the economy and the connection between centres and their hinterlands are also inadequate.
More attention should be give to the construction of inter-modal passenger centres that enable passengers to make efficient and safe transitions between various transport modes.

The delayed renovation of railway transport network and constant increase in road transport demands the construction of new infrastructure. The public passenger transport network in Slovenia is poorly interconnected and underdeveloped, mainly with regard to intermodality and logistics. Public passenger transport in the joint transport system has a small share and does not enable fast, comfortable and price-efficient mobility at the regional level.

The development of the railway network is also significant, because the railway network will take over the majority of long-distance freight transportation.



Source: MInf, SDSS, Official Gazette of the RS, no. 76/04

Figure 9 guidelines for developing an intermodal transport network in relation to settlements

The development of the port of Koper in connection with other northern Adriatic ports and with the hinterland or the Baltic-Adriatic and Mediterranean corridor is also important. An intercontinental maritime connection (passenger port) and maritime public passenger transport are significant for improving transport connections between cities in Slovenian Istria and other places in the northern Adriatic region.

1.5. SITUATION ANALYSIS OF SOME PARTIAL NATIONAL PROGRAMMES

1.5.1. State of public railway infrastructure considering the National Programme of the Slovenian Railway Infrastructure Development

The state of public railway infrastructure is worsening from year to year due to insufficient funds for its development, maintenance and modernisation. Only 25% of the National Programme of the Slovenian Railway Infrastructure Development adopted in 1995 by the Slovenian National Assembly has been realised The bad situation is also evident from the extent of the damage and number of faults on tracks, the catenary, signal and safety devices, and switches, and from low speeds, as well as from the following data on the state of individual infrastructure elements in 2010 that require urgent measures:

- major wear to tracks with a length of more than 36 km which need to be replaced;
- critical state of the catenary, where 40% require full renovation, 40% require major renovation works (worn carrying and attaching material of the catenary, poles etc.), whereas the state of some sections is the same as in the 1930s, when they were built;
- due to the delay in the renovation of tracks, around 39,000 sleepers should be replacedimmediately ;
- in 30 locations over a total length of 60 km, lower speeds are necessary due to the poor condition; this causes delays and complaints by users of railway services, including threats of cancellations of freight transportation by railway;
- 18 slides and dangerous slopes along the track over a total length of over 8 km have been recorded;
- the number of unresolved decisions of the Transport Inspectorate of the Republic of Slovenia is increasing.

Insufficient maintenance and the slow renovation of the railway infrastructure, along with increased burdening of tracks due to the increase in the amount of transport, is reflected in the greater number of decisions issued by the Transport Inspectorate limiting speed and axle loads, thus additionally affecting the quality of transport services. Due to this situation, transport services which have difficulties competing are becoming even more remote from the demands and needs of users. If the negative trends continue, it will not be possible to attain one of the fundamental goals of transport policy, since there is a serious threat that the goals regarding the increase in the share of railway transport will not be attained. In an extreme case,the continuation of negative trends could lead to closures of individual sections of lines.

Due to inadequate permissible axle loads, individual cargos are already being redirected to routes around Slovenia, which means the loss of cargo, or even the fact that wagons are 15% lighter than their permissible load capacity in certain directions of the main Zidani Most–Šentilj and Pragersko–Murska Sobota lines (where the axle load on D4 is currently being reconstructed). On the mentioned sections of the main lines of public railway infrastructure, permissible axle loads are lower than within the international framework of determined national axle loads of Slovenian railway infrastructure D3 which has a bearing capacity of 225 kN/axle and 72 kN/m.

Little of the public railway infrastructure is electrified - only around 500 km; currently, the Pragersko – Hodoš line is being electrified over a length of 109 km.

Due to the fact that the main priority is traffic safety, which given the current condition of the infrastructure can be provided only by reducing speeds – by introducing slow driving – delays in rail traffic are becoming longer.
In 2009, the average delays of passenger trains were 2.8 minutes per 100 train km, while in the same period in 2007, the delays were 2.7 minutes per 100 train km. Travel speed slightly decreased from 51.6 to 51.3 km/h. The situation in freight transport is critical, since in 2009, the average delay was 39.6 km per 100 train km; in 2010, the average delay was 78.8 minutes, while speeds fell from 28.8 km/h to 24.4 km/h.

The state of the public railway infrastructure and consequently freight and passenger transport in general is alarming:

- the results of insufficient investment in renovation and development of public railway infrastructure in the past 15 years are clear;
- the network of main lines has been more than 75% amortised, regional lines to an even higher extent;
- every year, the public railway infrastructure network is less competitive with the networks of northern and western neighbours;
- insufficient investment in rolling stock (reconstruction and purchase of new vehicles);
- the motorisation of Slovenians is at the point that, statistically, every citizen with a driving licence owns a private vehicle (non-implementation of transport policy);
- the vignette system stimulates private rather than public passenger transport (inappropriate implementation of transport policy);
- we are far from having efficiently integrated public passenger transport (too slow implementation of transport policy).

The National Programme of the Slovenian Railway Infrastructure Development (NPSRID) was adopted in the field of railway infrastructure (Official Gazette of the RS, no. 13–609/96).

Article 13 of the Railway Transport Act (Official Gazette of the RS, no. 11/11) stipulates:
The objectives and tasks of the Railway Transport Development Strategy, investments in public railway infrastructure and the maintenance of public railway infrastructure shall be specifically determined in the National Programme of the Slovenian Railway Infrastructure Development (hereinafter referred to as the National Programme) which is passed by the National Assembly of the Republic of Slovenia upon the proposal of the Government, i.e. for a minimum period of min. five years.
Regarding investments in public railway infrastructure and public railway infrastructure maintenance, the National Programme specifically determines the order of priority tasks of investing in public railway infrastructure and the maintenance of infrastructure, the sources of funds for their realisation and the dynamics as well as scope of realisation of individual tasks in the planned period. The determination of priority tasks must be based on transport policy and developmental goals by considering objective transport, technical, economic, financial and environment protection criteria.
Based on the National Programme and upon the Ministry's proposal, the Government adopts an annual investment plan (examines the applicability of legal provision) for public railway infrastructure and an annual (not harmonised with EU directives) maintenance plan (examine the suitability of the use of exchange terms related to maintenance; reconstruction, upgrade and new construction) of public railway infrastructure for a calendar

year. The Government reports to the National Assembly of the Republic of Slovenia on the realisation of the annual plan after the expiry of the period for which the plan was adopted. The proposals for new railway stops are studied and their realisation ensured. Existing stops are maintained and reconstructed. Railway stations and stops should be transformed into modern passenger terminals at sites where passengers change transport modes and where there are greater traffic flows, thus enabling them to change their transport modes. (Rail – road – cycle – airport – port).

1.5.2. National programmes for roads

Four sectorial-related resolutions were adopted in the past 16 years in the field of road transport infrastructure in the Republic of Slovenia:

The Resolution on the National Motorway Construction Programme in the Republic of Slovenia (ReNMCP) (Official Gazette of the RS, no. 50/04) was adopted in the field of road infrastructure. Despite the fact that, based on the preliminary provisions of the Roads Act, it formally ceased to apply on 1 April 2011, it is still being implemented with all its contents without any limitations, i.e. until the new programme document is adopted, which will regulate the development of the motorway network if this is not in contradiction with the Roads Act or the Motorway Company in the Republic of Slovenia Act (Official Gazette of the Republic of Slovenia, no.97/12 and 40/14 – ZUJF; ZDARS-1).Here, the primary provisions of ZDARS-1 on investing in the National Motorway Construction Programme (NMCP) are considered, the remaining provisions of the ReNMCP (especially the scope of investments) remain in use.

In relation to the above-mentioned national programmes, it should be mentioned that they have been realised to a great extent. As will be presented in the continuation, the success rate of the realisation of national motorway construction programmes has a key impact on transport flows in Slovenia.

The total length of state roads is 5,955 km. The managing company must provide maintenance so that all users of roads can safely use them by considering traffic rules and weather conditions. Since state roads are generally built, greater concern should be dedicated to maintaining and reconstructing the state road network.

There has never been a national programme for state roads. Expert bases were drafted for the preparation of a programme, which also contained investments and the maintenance of existing infrastructure, but the programme was never adopted. The state road network is growing older, so the costs of maintenance and reconstruction are also increasing. The maintenance and reconstruction system should be established in a way that annual investments in infrastructure exceed the actual annual wear on infrastructure.

Many state road connections can become developmental traffic routes with minimum investments, and it would suffice the needs of transport and at the same time offer development to individual regions.

1.5.3. National Maritime Development Programme of the Republic of Slovenia

On the basis of Article 33 of the Maritime Code (Official Gazette of the RS, no. 120/06 – official consolidated text, 88/10, 59/11), the National Assembly at its session on 26 October 2010 adopted the Resolution on the National Maritime Development Programme (ReNMDP). Article 33 of the Maritime Code stipulates that the guidelines for sustainable maritime development and for ensuring the safety of maritime transport are determined by the National Maritime Development Programme of the Republic of Slovenia. The National Programme is a strategic document that determines the state, objectives and measures for ensuring sustainable and comprehensive development, especially in the field of maritime transport safety and maritime economy.

We shall mostly focus on sections from the Resolution on the National Maritime Development Programme of the Republic of Slovenia (ReNMDP), which are the basis for the implementation of strategic measures in the field of maritime transport.

The port of Koper is integrated into the trans-European transport network TEN-T as one of the key entry and exit ports of the overall European network. Stimulating the development of maritime infrastructure is therefore a key element in establishing trans-European multi-modal networks that ensure the undisturbed operations of the internal market and the strengthening of economic and social cohesion. In this sense, Slovenia will support activities for the development of the highways of the sea that represent the maritime dimension of the trans-European transport network. Slovenia will encourage short-distance maritime transport mostly by supporting measures that contribute to eliminating administrative obstacles and unify administrative procedures, ensuring greater efficiency of ports and overcoming obstacles in connecting supply chains and to unburdening the road network with the use of alternative transport means (waterborne traffic, railway).

Within the scope of stimulating the development of motorways of the sea and short sea shipping, along with the development of port and hinterland infrastructure, the appropriate development of infrastructure and equipment for ensuring safety and monitoring maritime transport as well as other activities such as: process, procedures and human factors optimisation; development of IT and communication technological platforms and IT systems combined with transport management systems and electronic reporting; implementation of hydrographic and mapping services; investments in the development of maritime-related education; the development of maritime clusters and stimulating the development of economic activities in the field of shipping and ship component production.

All national maritime policies and development strategies in the future will focus on ensuring sustainable and comprehensive maritime management in accordance with the principles of the Integrated Maritime Policy for the EU.
In 2008, the Government of the Republic of Slovenia adopted the Decree on the administration of the freight port of Koper, port operations, and on granting concession for the administration, management, development and regular maintenance of its infrastructure (Official Gazette of the RS, no. 71/08, 32/11, 53/13, 25/14, hereinafter referred to as the Decree). In 2008, the Republic of Slovenia (provider of the concession) and Luka Koper d. d. (concessionaire) signed a Concession contract for performing port activities, and the management, development and regular maintenance of port infrastructure on the territory of

the Koper cargo port for 35 years (hereinafter referred to as the Concession Contract). In 2011, the Government of the Republic of Slovenia adopted the National Spatial Plan for an integrated regulation of the Koper cargo port that requires further expansion of port capacities and the development of activities.

In the field of maritime infrastructure development at the port of Koper, approx. one third of the existing port infrastructure has been reconstructed in the past twenty years. The additional construction of the 7c berth at the container terminal and the extension of berths at the chemicals terminal on Pier 1, the extension of the southern wharf of Pier 2 (11th berth) and the extension of the operational wharf on TRT on the northern side of Pier 2, and the construction of a multifunctional ramp at the front of Pool 2 etc.

Future measures related to investments in port infrastructure will mostly relate to the harmonisation of activities to ensure the realisation of the objectives of the Republic of Slovenia and the concessionaire, designed in the concessionaire's strategy as well as in the port's development programme (in accordance with the provisions of the Decree and the Concession Contract, the Government of the Republic of Slovenia adopts the Koper port development programme every five years, which it annually monitors or supplements), everything in accordance with the adopted National Spatial Plan for the integrated regulation of the Koper cargo port.

This refers to:

- Achieving maximum transhipment via the Koper port: 18 million tons of goods were transhipped through the port in 2013; the goal of the port is to increase total transhipment by 2020 to 23.5 million tons.
- Container transport (branch trend) and vehicle transport (specific advantage of the Koper port) are strategic cargos.
- The transhipment of all types of goods and preserving the purpose of the port (in favour of reducing business risks and capacities via internal redistribution of capacities due to greater cost efficiency).
- Systematic market management and development of offer to create added value.
- Establishment of closer and more efficient relations (long-term partnerships) among all providers of logistical services.
- Extensions and reconstructions of port infrastructure capacities, providing for appropriate integration of the port system in wider international infrastructural networks.
- Care for sustainable development, environment protection and safety.
- Use of economical, modern and innovative technologies, where information-communication support is very important.
- Cooperation between the concessionaire and the local community, socially responsible conduct.

1.5.4. Resolution on the Development of the National Civil Aviation of the Republic of Slovenia by 2020

Based on Article 6 of the Aviation Act (Official Gazette of the RS, no. 81/10–UPB4), the National Assembly of the Republic of Slovenia in 2010 adopted the Resolution on the National Civil Aviation Development Programme by 2020 (ReNCADP) (Official Gazette of the RS, no. 9/10). It was published on 9 February 2010. The purpose of the ReNCADP was

to outline common goals that stipulate the general framework for the future development of civil aviation in the Republic of Slovenia by 2020. This determines a framework for the provider of aviation services and potential investors, which is followed and supported by the state in the long-term aspect.
The foundations of the development of civil aviation were:

- safety and reducing risks in civil aviation, and
- sustainable development and competitiveness.

Among the objectives that were determined based on the analysis of the situation of Slovenian civil aviation, which we would like to attain by 2020, another objective is to guarantee the safety of civil aviation; the ReNCADP prioritised the development of the activity and infrastructure of civil aviation, closer connections with other industries, mostly tourism, and integration in the entire transport network of the Republic of Slovenia, thus achieving the objective and positive consequences of inter-modality.

1.5.5. Situation analysis in Slovenian air transport and forecasts

In 2013, 1,321,153 passengers arrived and departed from the Jože Pučnik Ljubljana Airport, our major airport, which is slightly over 10% more than in 2012.

The maximum number of passengers travelled through this airport in 2008, i.e. 1,648,980. In 2011, the number of passengers continued to decrease, while the quantity of cargo was higher. In 2013, there was another increase in the number of passengers.

Eurocontrol, the European organisation for air transport safety, forecast a slight decrease in transport in 2012, and another slight increase in 2013. Kontrola zračnega prometa Slovenije, d.o.o. has for several years noted a constant increase in the scope of air transport. Average growth in air transport in Europe in the past seven years has been 2%.

1.5.6. ReNCADP measures that relate to public transport infrastructure

The ReNCADP (Resolution on National Civil Aviation Development Programme) determined the concrete measures to be used to achieve its objectives. The following measures were determined to achieve the objectives; they refer to public transport infrastructure in air transport:

- the construction of the new air transport control centre,
- the preparation and adoption of executive spatial acts for public airports of national significance,
- the construction of the passenger terminal at the Edvard Rusjan Maribor Airport,
- the construction, reconstruction and extension of airport infrastructure,
- the construction of the passenger terminal at the Jože Pučnik Ljubljana Airport,
- the construction of the cargo terminal at the Jože Pučnik Ljubljana Airport,
- the construction of railway connection to the Jože Pučnik Ljubljana Airport.

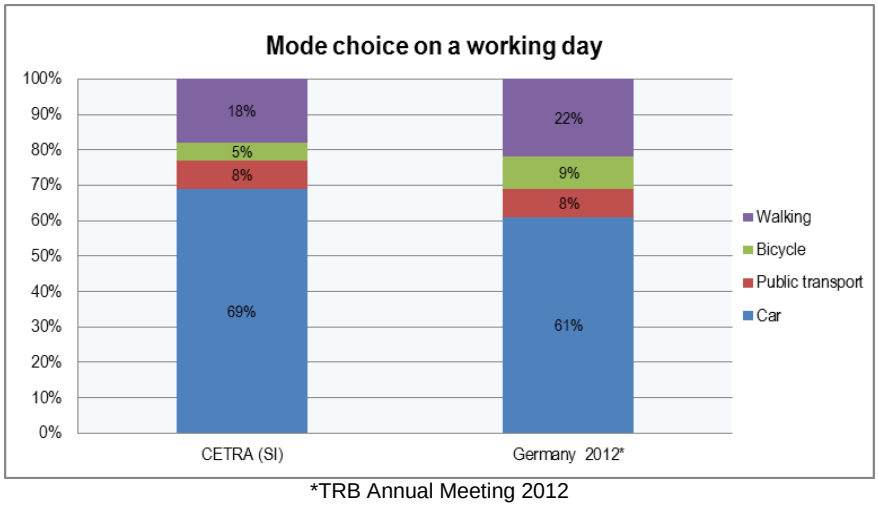
Measures determined by the ReNCADP should in future be harmonised with measures for the implementation of regulations of the Single European Sky and in accordance with Eurocontrol's Convergence and Implementation Programme (for air transport navigation services system).

1.6. ANALYSIS OF PAST DEVELOPMENT AND CURRENT SITUATION

1.6.1. Modal split in the Republic of Slovenia

Passenger transport

Figure 10 shows that in passenger transport, the use of private vehicles prevails; 8% of journey are taken by public passenger transport, 5% by bicycle and 18% walking. Modal split is comparable to Germany. More journey in Slovenia are taken by private vehicle, since Slovenia has a lower level of urbanisation and there are no major cities; however, there are many small, fragmented and dispersed settlements. More journeys by private vehicle are undertaken in small settlements, and fewer journeys in large settlements.



*TRB Annual Meeting 2012

Figure 10 Modal split for passenger transport in Slovenia

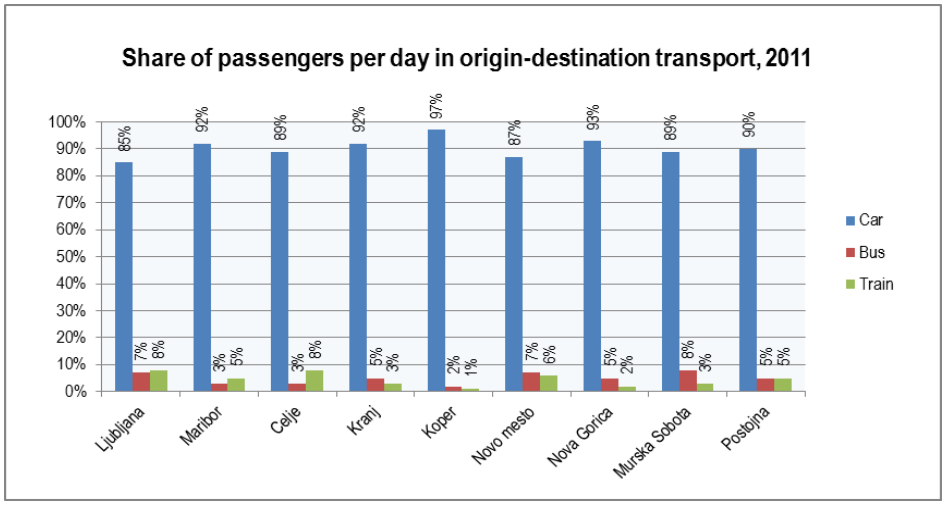


Figure 11 Modal split at arrivals in nine major Slovenian cities and departures from them

Figure 11 shows how the transport modes are chosen for destinations in 9 major Slovenian cities and departures from them. The use of private vehicles prevails everywhere, since 85% to 97% of all journeys are taken by car, and by public passenger transport only 3% in Koper to 15% in Ljubljana.

We can establish that private vehicle is the dominant transport mode in Slovenia, which is also the consequence of settlement, high motorisation level, relatively unattractive public transport and the insufficient or non-systematic implementation of sustainable mobility measures at the national and local levels.

Freight transport

The use of road also prevails in freight transport. The graph in Figure 12 shows that in Slovenia, 23% of transportations are on railways and 77% by road. Similar proportions also apply to other European Union countries. We need to emphasise that the statistical data on realised tonne-kilometres by road vehicles does not exist in a specific country. There are only data on tonne-kilometres of road vehicles registered in a certain country; therefore, only a general comparison can be made. Despite this, we can establish that in the entire European Union (EU 27), similar choices of transport modes apply, since 75.5% of cargo was transported by road in 2011 (expressed in tonne-kilometres), 18.4% by rail and 6.2% by internal waterways. The modal relations shown on Figure 12 are determined by models.

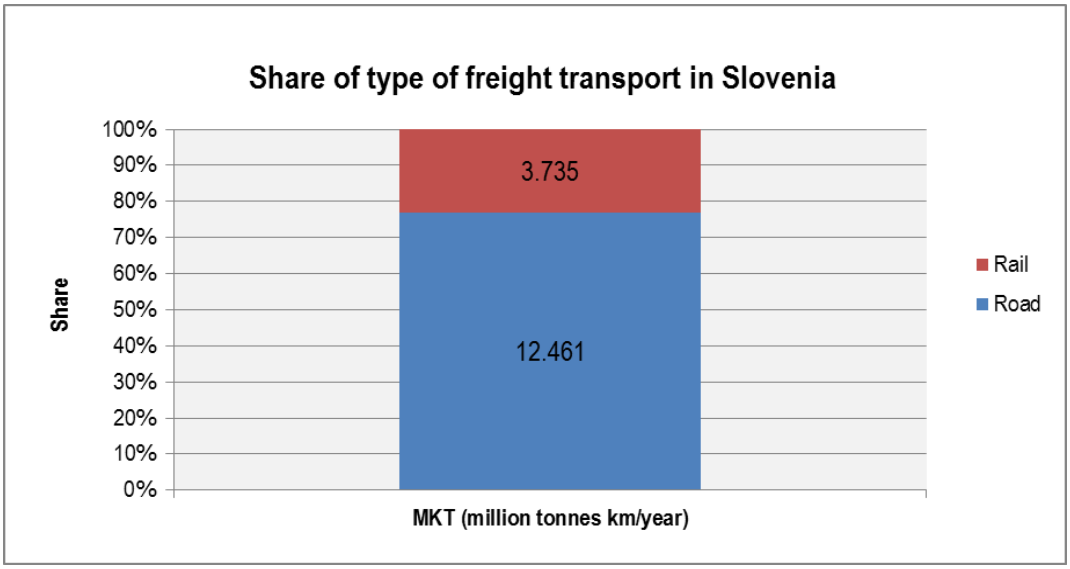


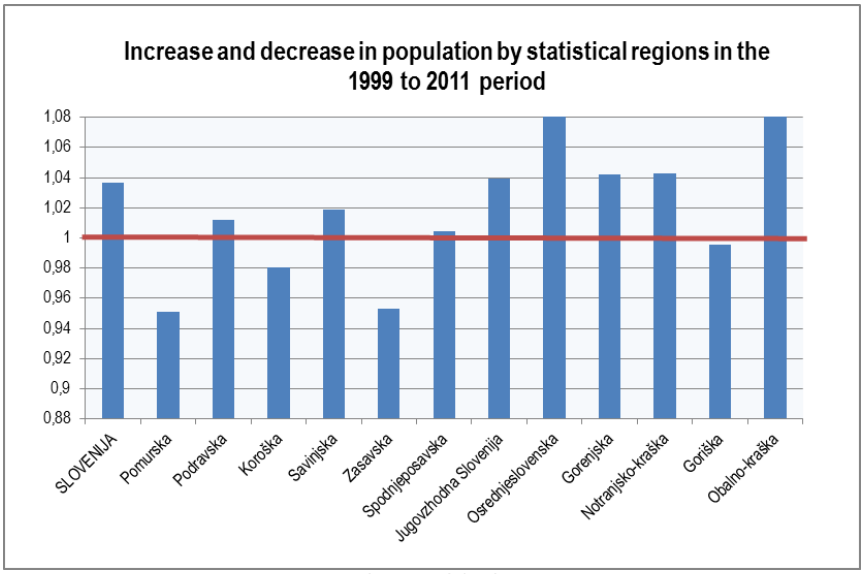
Figure 12 Mode of freight transport in Slovenia, 2011

1.6.2. Current development of passenger and freight transport

Demographic features

2,052,496 people were living in Slovenia in 2011; in the past ten years, the number has gradually increased, and by slightly more than 3% in the past 12 years. The relation between age groups is slowly changing in favour of older people and to the disadvantage of younger generations. The share of people younger than 30 years has decreased by 5% in ten years; the share of elderly people over 60 years of age has at the same time increased by 2%. The share of age group from 30 to 59 years, i.e. the age group that is most active, has increased by around 3%. However, in the future, the share of this age group will decrease. The low birth rate and the structure of age groups cause a process of expressive ageing of population and a long-term reduction in the population.

According to the number of people, relations between statistical regions have not significantly changed in the past ten years. However, there is a trend of emptying less developed and filling more developed areas. In ten years, the number of people in the Pomurje region decreased by approx. 5%, in the Zasavje region by slightly more than 4%, in the Koroška region by 2% and in the Goriška region by less than 1%. In other regions, the population in the same period, mostly in the central Slovenian region and the coastal and Karst region, i.e. by 8%. The population in this period increased by more than 2% in the Gorenjska region, SE Slovenia and the Notranjska-Karst region.

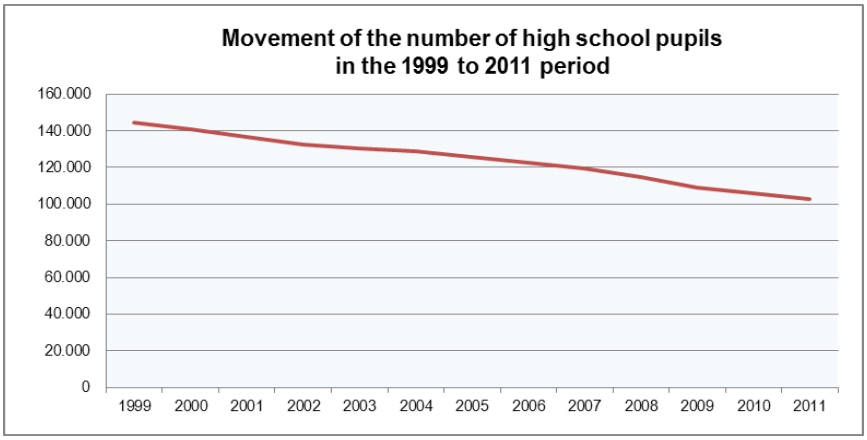


Source: SORS

Figure 13 Increase and decrease in population by statistical regions in the 1999 to 2011 period

The number of high school pupils and students

In 2011, there were around 103,000 high school pupils and around 115,000 students in Slovenia, which is quite a large number of people, who have quite an impact on transport demand. From 1999 to 2011, the number of high school students decreased significantly, i.e. by 29%, while the number of students in that period increased by one or two per cent.



Source: SORS

Figure 14 Movement of the number of high school pupils in the Republic of Slovenia in the 1999 to 2011 period

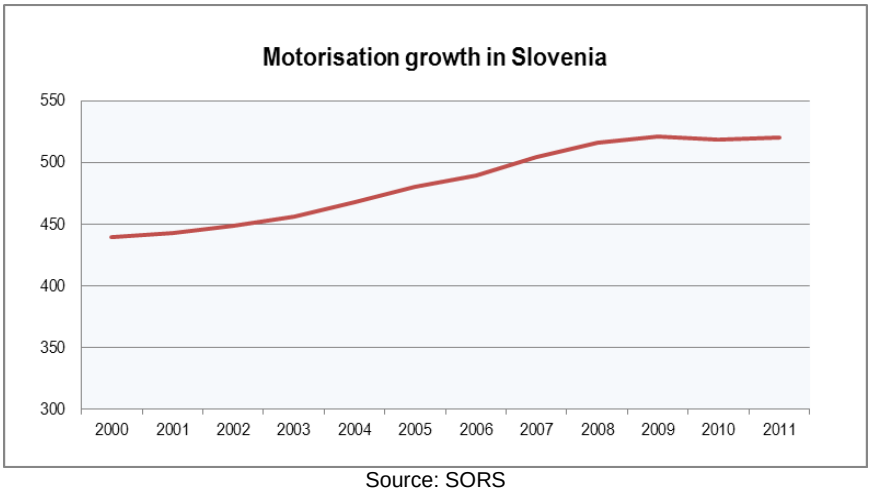
The number of high-school pupils has decreased in all regions in the past decade, mostly in those regions, where the overall population decreased, i.e. in the Pomurje region, by 36%, in the Zasavje region by 30% and in the Koroška region by 28%. The minimum reduction in the number of high-school pupils was in central Slovenia, i.e. by 16%, and in SE Slovenia, i.e. by 18%. Elsewhere, the number of pupils decreased at approximately the same rate as the average decrease in the Slovenian population.

The number of high-school pupils is important, because they are among the main users of public passenger transport. In the future, the share of younger people will be lower, which will probably lead to a reduced use of public passenger transport if the current developmental direction of implementing transport policy does not significantly change.

Increase in motorisation

In the past twenty years, motorisation in Slovenia increased by 23%, and in 2011 amounted 523 personal vehicles/1000 people. Therefore, Slovenia has almost caught up with European countries with the highest motorisation rate; therefore, it ranks among the most developed European countries in this respect. Because of the crisis, motorisation growth stagnated in 2009.

The motorisation rate in four regions in Slovenia was above average, and in 2011 amounted: in the Goriška region to 580, in the coastal and Karst regions to 586, in the Notranjska-Karst region to 543 and in the central Slovenian region to 547 private vehicles/1000 people. A markedly below-average motorisation rate was achieved in the Zasavje region (460), Pomurje region (465), Koroška region (483) and Podravje region (491 private vehicles/1000 people).



Source: SORS

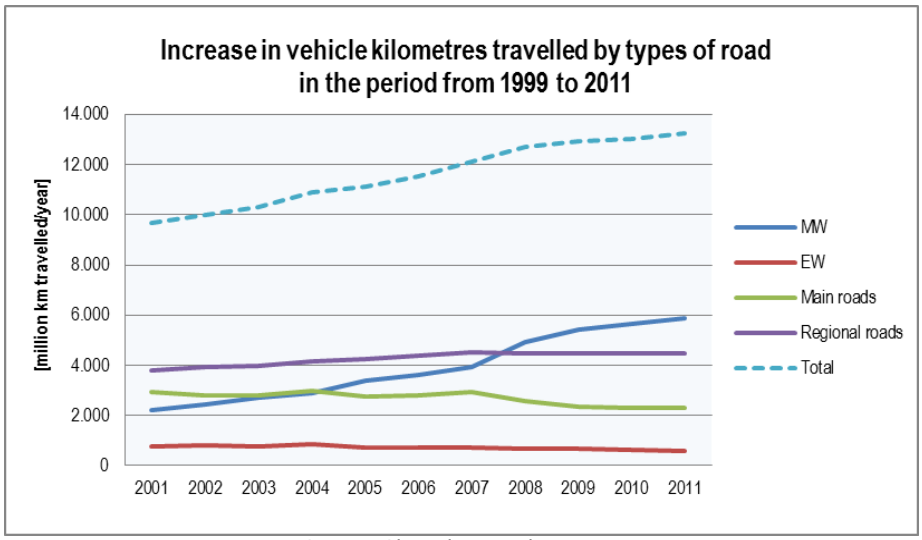
Figure 15 Motorisation growth in Slovenia between 1999 and 2011

Motorisation by regions is gradually equalising, because it is growing above average in less developed areas and below average in more developed areas.

High motorisation also leads to more use of private vehicles. Motorisation in Slovenia with regard to GDP and personal income is quite high. This is also affected by the dispersed settlements typical of Slovenia, which demand greater use of private vehicles, at the same time the use of private vehicles also accelerates the construction of such settlements.

Vehicle kilometres travelled on roads

Transport by private vehicle is constantly rising. From 1999 to 2011, transport increased by 32%. The average growth rate was around 3% per year. Due to the crisis, growth has been stagnating after 2008, and in some places there has been a decline in the volume of traffic. When economic growth is positive, this mode of transport will also increase.

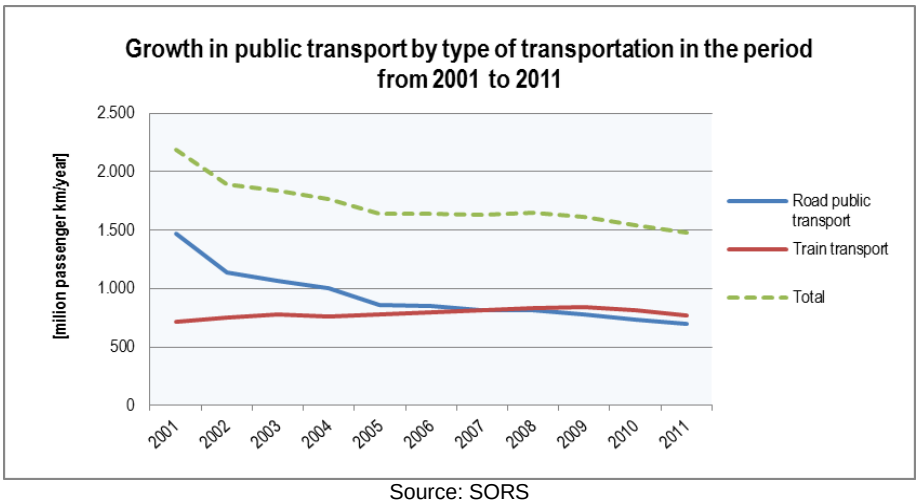


Source: Slovenian Roads Agency

Figure 16 Increase in vehicle kilometres travelled by types of road in the period from 1999 to 2011

Passengers travelling by public transport

While in the past, private transport constantly increased, the number of passengers that travel by public passenger transport has decreased. Road, i.e. bus public passenger transport (which does not include city public passenger transport) decreased by 38% from 2002 to 2011, or 3.7% per year. The number of passengers travelling by city public passenger transport decreased by 13.4% in the same period. Train passenger transport slowly increased, but only until 2009, whereupon it began to decrease.



Source: SORS

Figure 17 Increase in passenger kilometres by types of road in the period from 2002 to 2011

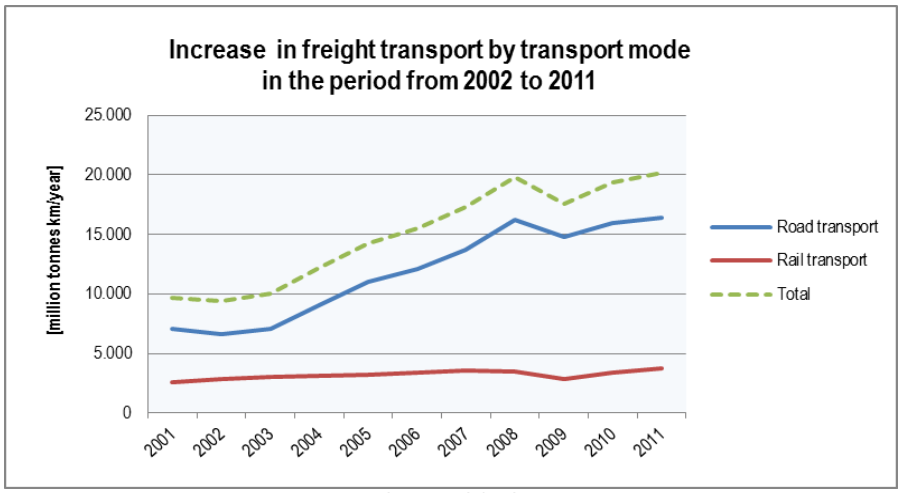
From 2001 to 2008, it increased by 16.6%, then decreased by 13.8%. In total, bus and train public passenger transport from 2001 to 2011 decreased by 32% or by 2.8% per year.

Therefore, the current developmental direction regarding the selection of public transport means is such that the use of private vehicles is constantly rising, and the use of public transport is decreasing. If this developmental continues, the use of private vehicles will increase in the future and the use of public transport will relatively decrease.

Rail freight transport

Road and rail freight transport is increasing. However, road freight transport is increasing significantly faster than rail freight transport. The graph in Figure 18 shows that freight transport increased until 2008, decreased from 2009 to 2009 and has been rising since 2009. 149% more cargo was transported by road in 2011 than in 2002. Road freight transport in this period increased at an average annual rate of more than 11 per cent. Rail transport in this period increased by 32% or an average 3.1% per year.

The freight transport is still implemented more by road than by rail.



Source: SORS

Figure 18 Increase in freight transport by type of transport from 2002 to 2011

Transport at the port of Koper and Jože Pučnik Ljubljana Airport

In the past eleven years, freight transport at the port of Koper increased by an average of 5.6 per cent annually, passenger transport at Jože Pučnik Ljubljana Airport by 3 per cent and freight transport by 8.5 per cent. In the past few years, transport at the port and at the airport increased relatively rapidly. A decrease in transport was recorded on almost all levels after 2008, but freight transport once again started increasing in 2009 (except in 2012, when it dropped at the airport, while in 2013, it again started to increase); passenger transport continued to decrease, i.e. until last year, when it started increasing.

Table 3 Transport at the port of Koper and Jože Pučnik Ljubljana Airport by year

Year	Port of Koper	Ljubljana Jože Pučnik Airport	
	Transhipment (tons)	No. of passengers	Air cargo (tons)
2000	9.321.832	991.693	5.774
2001	9.353.991	894.130	5.683
2002	9.431.497	872.966	5.187
2003	11.036.457	928.397	5.027
2004	12.402.607	1.048.238	5.017
2005	13.066.102	1.218.896	5.245
2006	14.030.732	1.334.355	8.059
2007	15.362.979	1.524.028	13.176
2008	16.050.448	1.673.050	9.118
2009	13.143.620	1.433.855	14.333
2010	15.372.043	1.388.651	17.310
2011	17.051.314	1.369.485	19.659
2012	17.880.697	1.198.911	17.031
2013	17.999.662	1.321.153	17.777

Source: Annual reports of considered institutions.

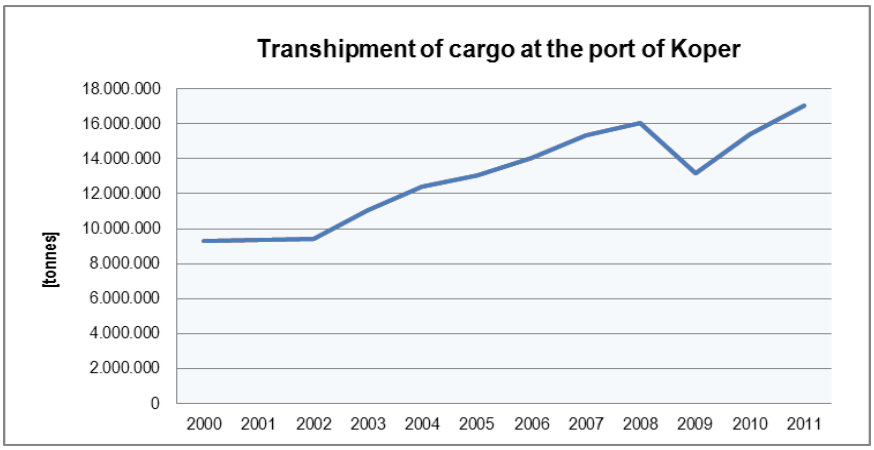


Figure 19 Transhipment of cargo at the port of Koper, 2000 to 2013

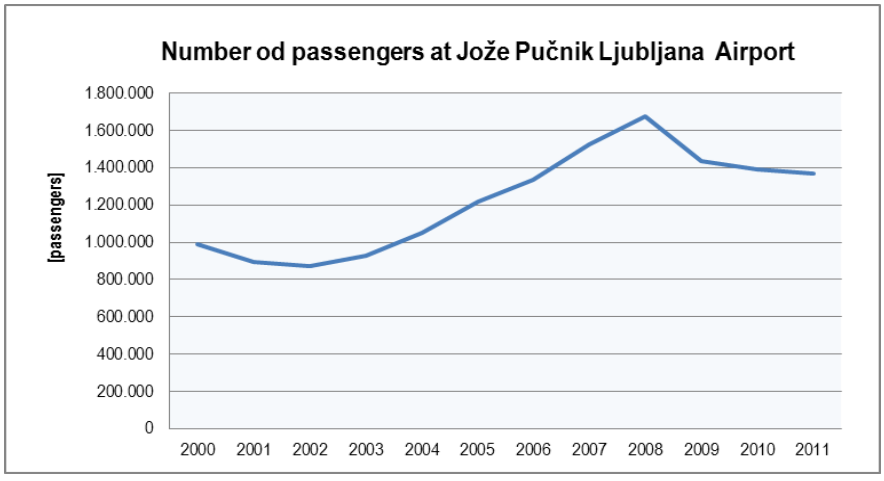


Figure 20 Number of passengers at Jože Pučnik Ljubljana Airport, 2000 to 2013

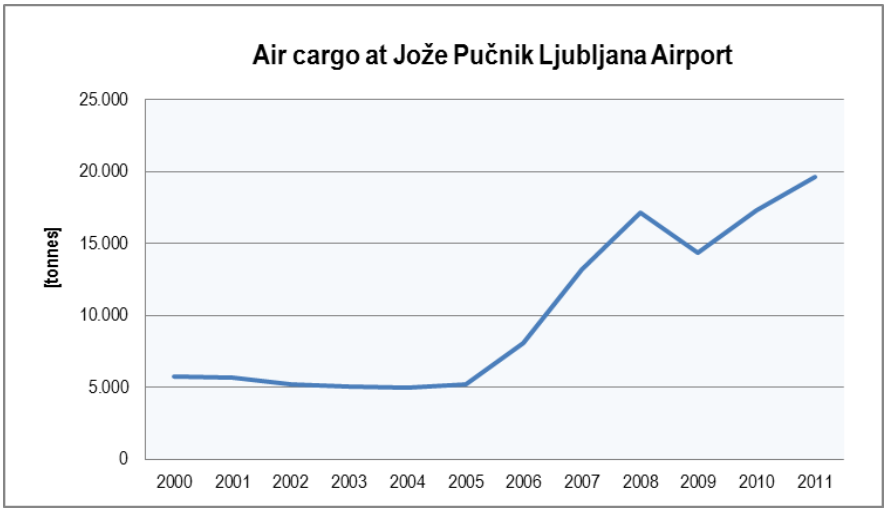


Figure 21 Air cargo at Jože Pučnik Ljubljana Airport, 2000 to 2013

1.6.3. Transport flows in 2011

Freight flows

Freight flows are shown on Figures 22 and 23, i.e. transport freight flows by rail and road are shown in 1000 net tons/year.

The current situation (2011) shows that freight flows in Slovenia and its vicinity shows are relatively strong on the routes Divača – Ljubljana, Ljubljana – Zidanim Most and Zidani Most – Pragersko, and do not lag behind volumes in neighbouring corridors.

40 million net tons/year were transported in 2011 by rail and road on the Brenner Pass, which is one of the most important European corridors and connects the economies of Germany and Italy. According to estimates[1], in Austria most flows has corridor Vienna – Linz, approx. 50 million net tons/year were transported by road and rail. In the area of Koralm, some 22 million net tons/year were transported.

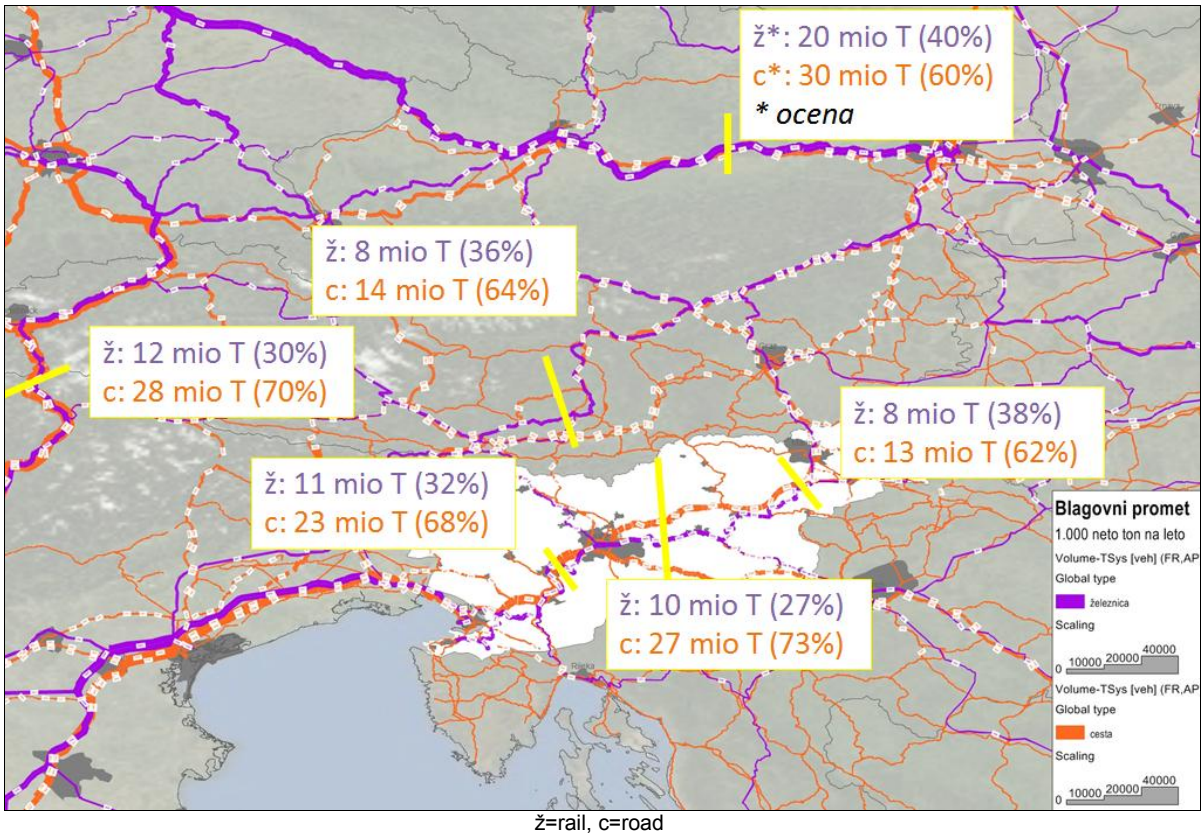
34 million net tons/years were transported by rail and road on the Slovenian Divača – Ljubljana corridor, and 37 million net tons/year on the Ljubljana – Zidani Most corridor (including by rail as well as the Štajerska and Dolenjska motorways), which is almost as much as over the Brenner Pass. Some 21 million net tons/year were transported on the Zidani Most – Pragersko section, which is almost as much as through the Koralm Tunnel.

On all corridors, more freight is transported by road than rail; 27% to 40% of cargo is transported by rail on the analysed corridors. Slightly more goods are transported in Austria by rail (36% to 40%), and slightly less across Brenner and in Slovenia (27% to 38%).

In 2030, the volume of freight transported on the Slovenian corridor Divača – Ljubljana will increase by 88% and will amount to 64 million net tons/year; the volume of freight transported on the Ljubljana – Zidani Most corridor will increase by 76% and will amount to 65 million net tons/year or the same as across the Brenner Pass. On the Zidani Most –

[1] Exact information is not available to public, but values are estimated based on the known number of freight trains and road cargo vehicles.

Pragersko section, the volume of transported goods will increase by 90% and will amount to 40 million net tons/year, or more than at Koralm.



ž=rail, c=road

Figure 22 Freight by rail and road transport (net tons/year), year 2011, wider area

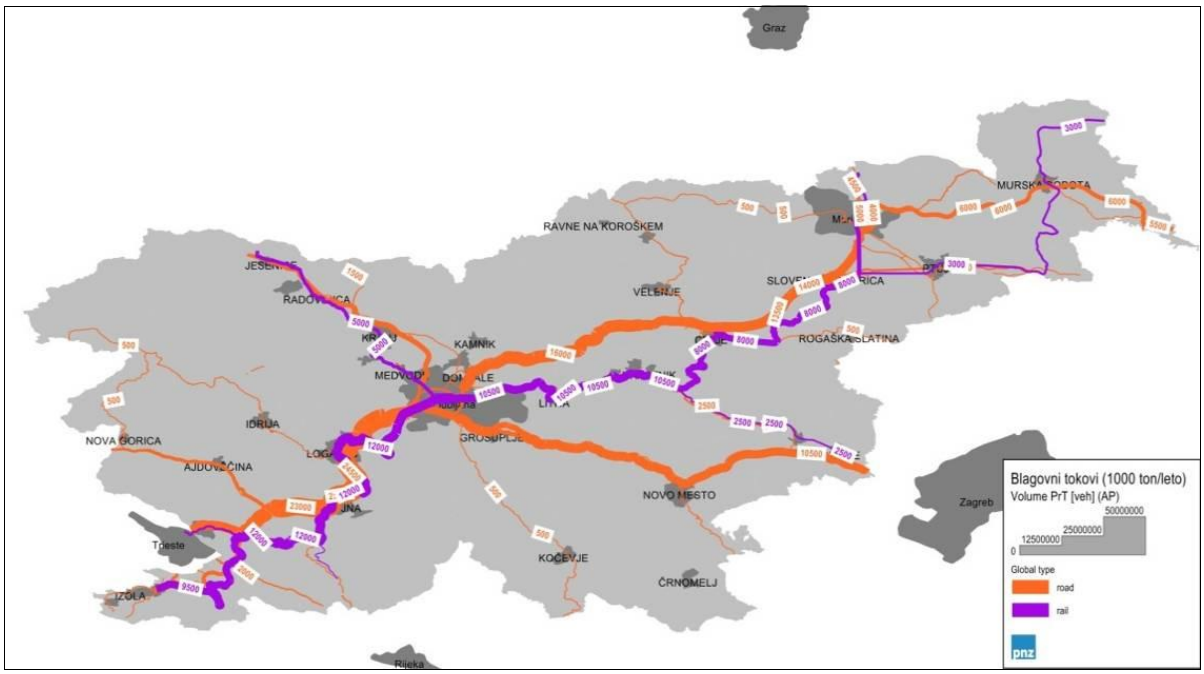


Figure 23 Freight by rail and road transport (net tons/year), year 2011, narrower area

On the two Austrian sections, the modal split will not change, but it will change across the Brenner Pass and on the Slovenian sections, i.e. in favour of rail. However, not to such an extent that would equal the Austrian share on the railways.

Road transport

The modelled transport flows on the current network for 2011 are approximately the same as the numerical data. As is already known, most transport is done on the Slovenian motorway cross. The area of Ljubljana with its motorway ring and connection sections stands out and also partially the area of Maribor. Currently, there are approximately 55,000 to 60,000 vehicles/day on the connection motorway sections around Ljubljana, which is already close to the capacity limit. The SW-NE direction has most flows on the motorway cross, similarly to rail transport (Figure 24).

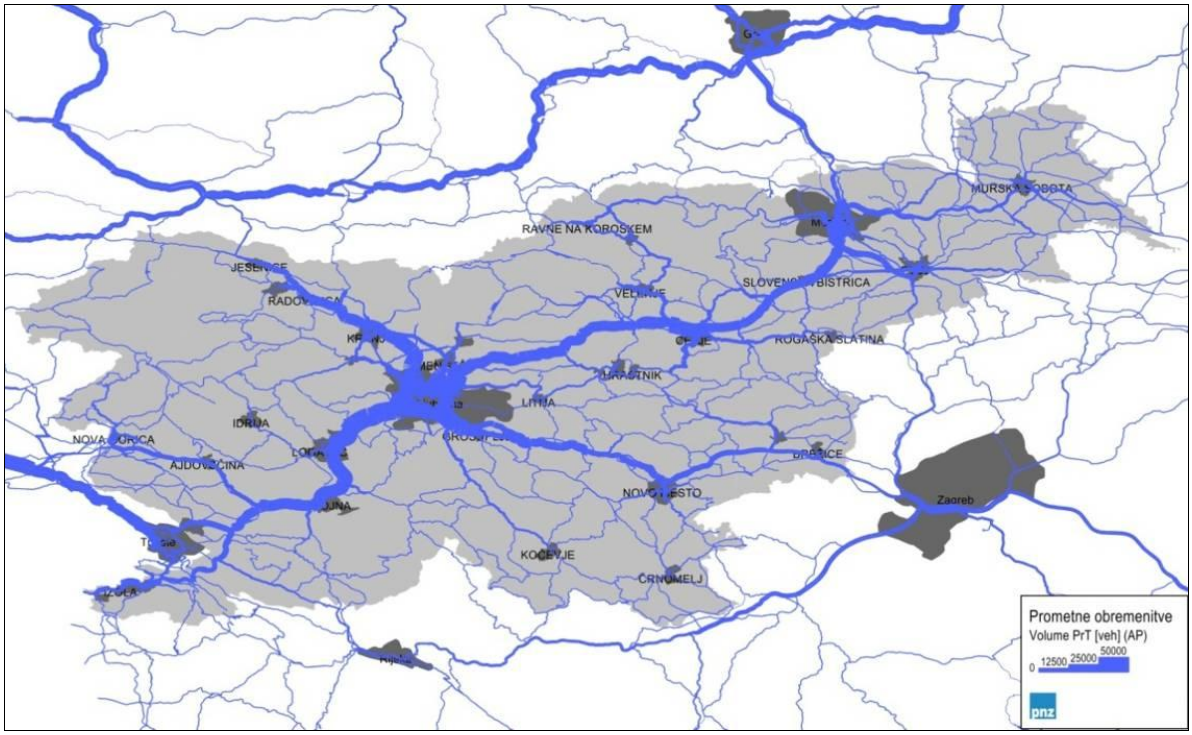


Figure 24 Road transport flows (vehicles/working day), year 2011

The transport flows in Ljubljana's surrounding area does not lag behind the flows around other bigger cities (Vienna, Munich, Venice – Trieste section). Ljubljana is smaller, but has a good geostrategic position, which is also very interesting for international transport, especially in the direction of the Mediterranean corridor.

Public passenger transport

Generally, there is more public transport around major urban agglomerations. In the near vicinity, this applies to the area around Vienna, Munich and the Venice – Trieste section. There is significantly less public passenger transport in Slovenia; the area around Ljubljana stands out.

Figure 25 shows the current situation of existing (rail and bus) public transport. Buses have approximately the same number of passengers as trains, but bus passengers are distributed throughout the network, while rail passengers are concentrated in a few corridors. Five railway corridors are especially important here, i.e. towards Ljubljana,

especially on the Zidani Most – Ljubljana section. More transport is also conducted on routes Šentjur – Celje, Laško – Celje and Pragersko – Maribor.

Figure 26 shows the number of entries and exits at stops and stations. We should emphasise Ljubljana and Maribor, places around Ljubljana (Vrhnika, Borovnica, Kranj, Medvode, Domžale, Grosuplje etc.) and Celje, Zidani Most, Zagorje, Litija, Ptuj etc. Figure 27 shows passes, mostly in Ljubljana, Maribor and Zidani Most.

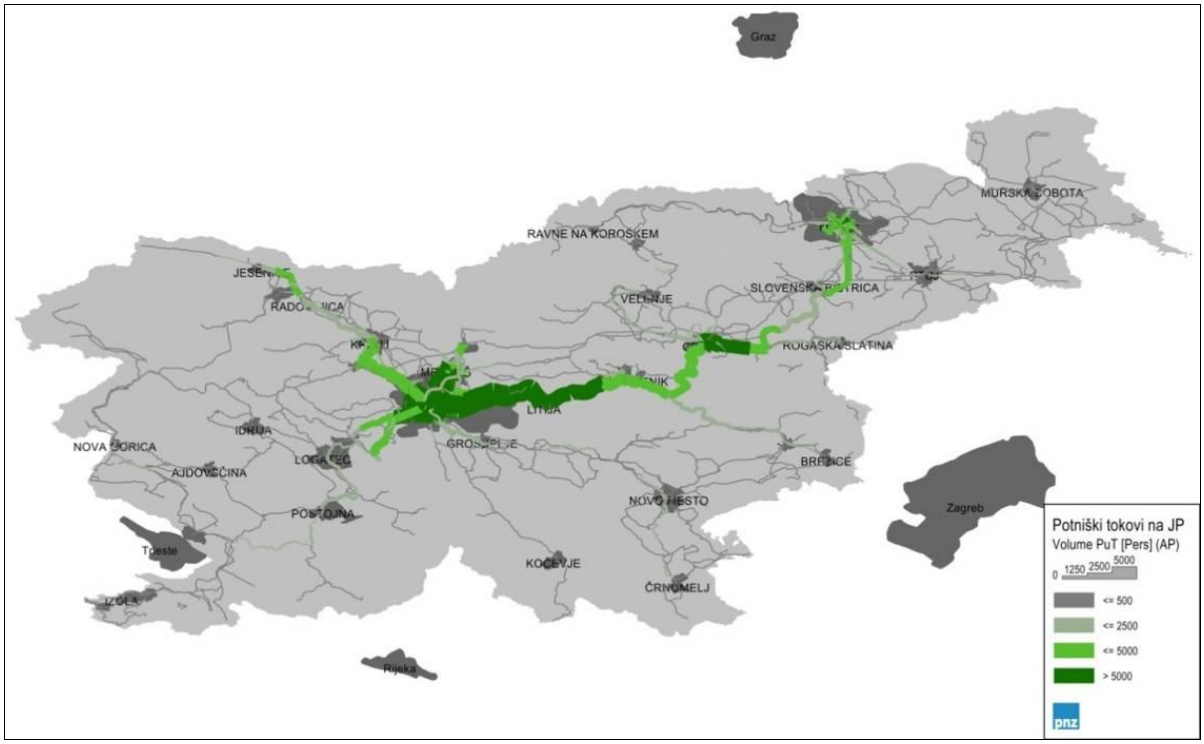


Figure 25 Public passenger transport flows (passengers/working day), year 2011

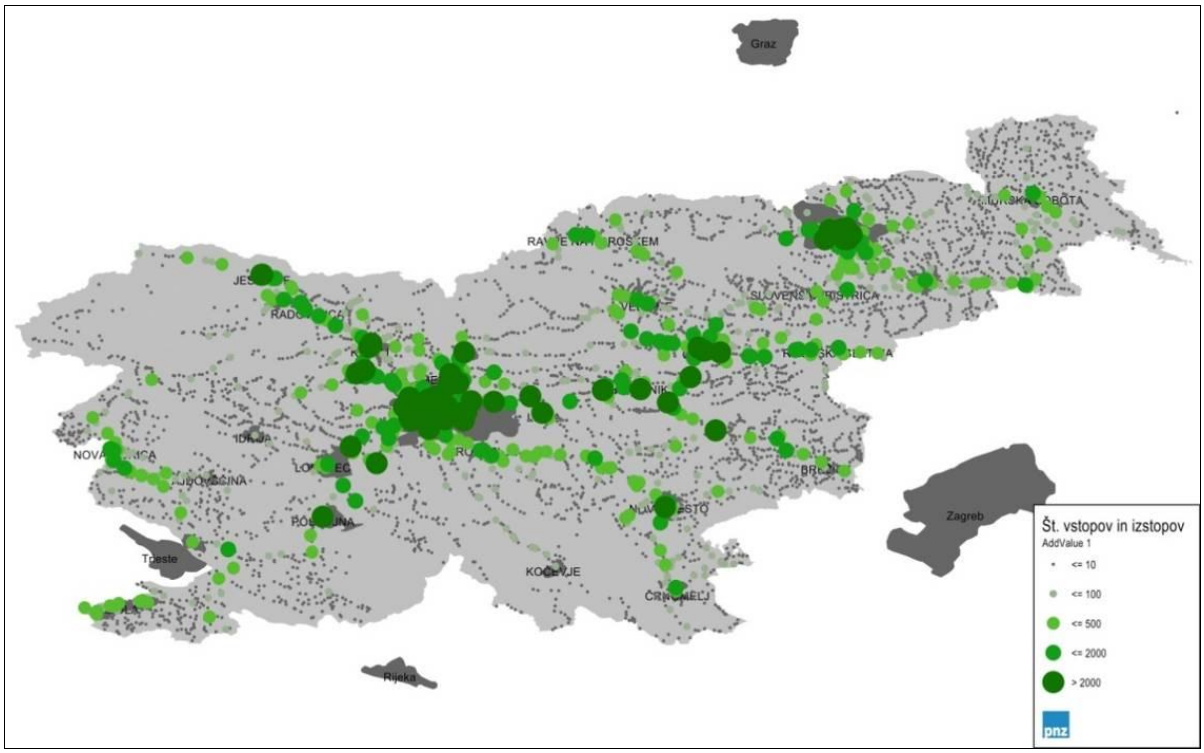


Figure 26 Number of entries and exits on public transport (entries and exits/working day), year 2011

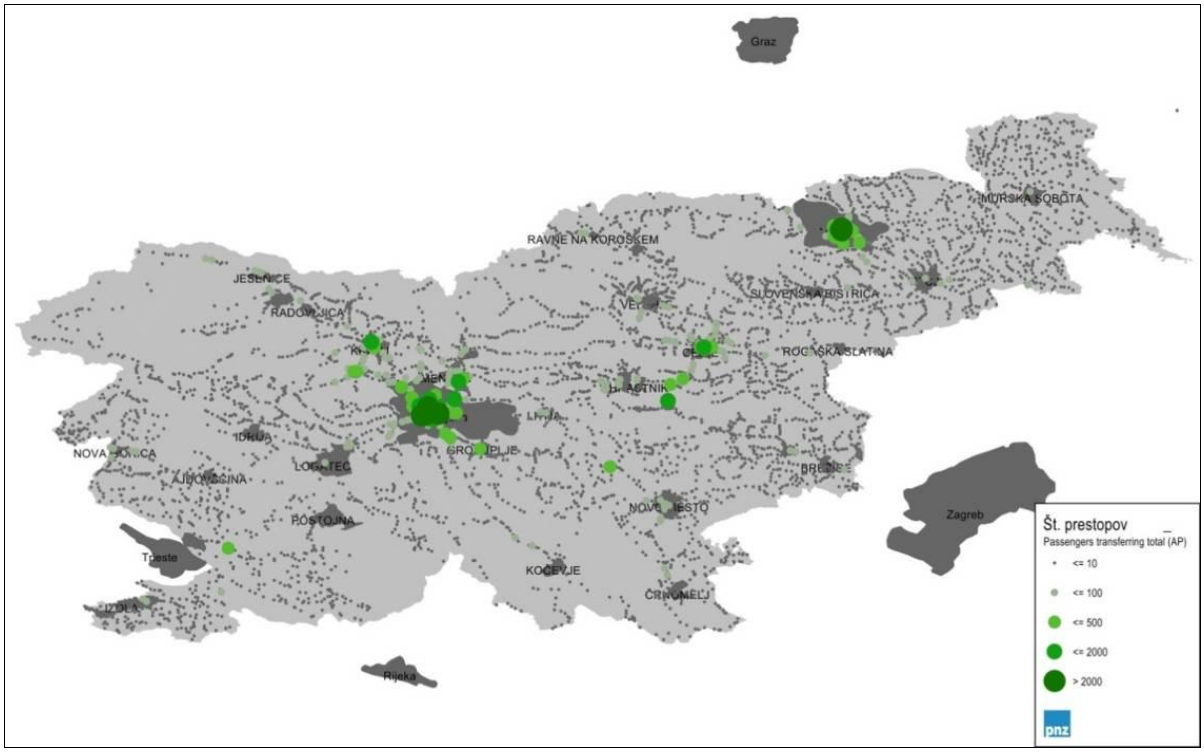


Figure 27 Number of transfers on public transport (all transfers/working day), year 2011

1.7. THE EU WHITE PAPER ON TRANSPORT

In March 2011, the European Commission adopted the third White Paper on European transport policy, entitled 'White Paper: Roadmap to a Single European Transport Area – Towards a Competitive and Efficient Transport System'. The first document with regard to this topic was issued in 1996 with the aim of opening the market in transport services. In 2001, the Commission issued a second document with the main purpose of changing the use of the dominant transport modes. In this document, the Commission refers to modal shift to more environmentally friendly transport modes, especially from road to rail, as well as inland waterways and the maritime sector. By implementing an interim review of policy implementation in 2006, the Commission introduced the principle of co-modality, i.e. that it is necessary to optimally exploit all transport methods internally or by combining them, thus exploiting the advantages of each individual transport mode. The latest White Paper takes a step forward by connecting all transport modes with the aim of enforcing the advantages of each one in a single European transport area. Slovenia welcomed this approach to EU transport policy, since this establishes fair competitiveness among transport modes by enabling their competitive advantages.

None of the transport policies published by the Commission since 1996 has received support from the EU Council. Therefore, all documents remained simply Commission communications, and Member States considered only their individual parts with regard to their national transport policies or interests, and not the entire document.

In the latest White Paper, the European Commission adopted a plan that encompasses incentives with the aim of building a competitive transport system that enhances mobility and eliminates obstacles in key areas. The new European transport area plan is dedicated to enhancing mobility and the further interconnection of European transport networks. The key issues addressed by this document are:

- reducing the dependence of EU Member States on oil imports,
- reducing greenhouse gas emissions.

The document further strengthens the concern for environment protection and sets the following objectives in the field of greenhouse gas emissions reduction in general, i.e. in the field of transport:

- 20% reduction below the 2008 level by 2030,
- at least a 70% reduction below the 2008 level by 2050.

The White Paper sets the following milestones:

1. Until 2020:

- to establish a framework for a European multi-modal transport system for notification, management and payment;
- to establish a modernised infrastructure for air transport management (SESAR) and complete the European single airspace; to establish land and waterborne transport management systems (ERTMS, ITS, SafeSeaNet, LRIT and RIS);
- to establish a European global navigation satellite system (Galileo).

2. Until 2030:

- To halve the use of "conventional fuel"-driven vehicles in urban transport and introduce logistics without CO_2 emissions;

- 30% of road freight over 300 km should shift to other modes such as rail or waterborne transport by 2030;
- to comprehensively establish a functional and multi-modal core TEN-T network at the EU level and triple the length of the existing high-speed rail network.

3. Up to 2050:

- To eliminate "conventional fuel"-driven vehicles in cities;
- More than 50% of road freight over 300 km should shift to other modes such as rail or waterborne transport by 2030, (achieved with efficient and green corridors for cargo transport). The majority of medium-distance passenger transport should go by rail;
- To guarantee a 40% share of sustainable low-carbon fuels in air transport;
- To ensure a 40% (if possible, 50%) reduction in CO_2 emissions which occur due to fuels from ship tanks in the EU in maritime transport;
- To complete the high quality and capacity TEN-T network at the EU level and complete the European high-speed rail network with an appropriate set of information services. All airports in the core network must be connected with the rail network, i.e. with a high-speed network if possible. All key ports must be sufficiently connected with a railway freight network and, if possible, with the inland waterways system;
- In the field of transport safety, to reduce the number of fatal accidents to zero;
- Move towards full application of “user pays” and “polluter pays” principles andprivate sector engagement to eliminate distortions, including harmful subsidies, generate revenues and ensure financing for future transport investments;
- Planned measures for stimulating investments in transport infrastructure and change in transport patterns in the field of passenger and freight transport are focused on strengthening economic competitiveness and employment. The plan focuses on city and intercity transport as well as long-distance travel.

Urban transport will be based on public passenger transport by increasing the frequency of services, walking and cycling. Smaller and lighter specialised vehicles for passengers will be available in cities, and powered by alternative fuels and using new technologies. In order to attain the objectives, cities will design mobility plans. Intercity travel will be implemented mostly by buses and railway transport along designed multi-modal passenger platforms. Co-modality will be typical of freight transport over these distances, and above all, the EU will develop several entry points or ports to shorten excessive land haulage by efficiently utilising river transport. Long-distance haulage and intercontinental freight transport will be implemented by airlines and maritime vessels, whereby the EU's goal is to attain the same competitive conditions at the global level by improving the efficiency of transport management. The objective of the undisturbed transition between transport modes is also emphasised, such as between trains, aircraft and maritime vessels, thus increasing the efficiency of the trans-European transport network and simplifying passenger and freight transport.

The implementation of such a vision requires an efficient framework for users and operators in transport, the early use of new technologies and the development of appropriate infrastructure that in the EU is based on the TEN-T network. To realise the vision, it will be essential to:

- eliminate obstacles to undisturbed operations and efficient competition in the internal market – designing a single market for transport services,
- introduce innovations and connect all stakeholders,

- plan appropriate investments and sufficient financial resources to achieve the requisite features of the network,
- Appendix I to White Paper states the list of planned initiatives that will be prepared by the Commission to achieve the desired goal, and which constitute a concrete action plan for implementing the new EU transport policy.

As already stated, such EU transport policy guidelines have not been confirmed by the EU Member States or the EU Council with any documents (Council's resolutions or the like); however, the document is a framework for the Commission's work, so it should be considered to the maximum extent possible also in the designing of this national programme.

1.8. THE FUTURE EU LEGISLATIVE FRAMEWORK FOR THE TRANS-EUROPEAN TRANSPORT NETWORK

In February 2009, the European Commission published a Green Paper on the future trans-European transport network (hereinafter referred to as the TEN-T network), entitled 'Green Paper, TEN-T: A Policy Review – Towards a Better Integrated trans-European Transport Network at the Service of the Common Transport Policy'.

Two and a half years of discussions, consultations, conferences and the work of the TEN-T committee followed.

On 19 October 2011, the Commission presented a new 'Proposal for the Regulation of the EP and of the Council on the Union's Guidelines for the Development of the trans-European Transport Network'. The Regulation was accompanied by a regulation on financing the TEN-T network in the next financial perspective, entitled the 'Proposal for the Regulation of the European Parliament and of the Council establishing the Connecting Europe Facility'.

Both regulations were discussed according to the regular legislative procedure and were finally harmonised in 2013; on 11 December 2013, they were published in the EU Official Journal, i.e.

- Regulation (EU) No. Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network (hereinafter referred to as the TEN-T Regulation) and
- Regulation (EU) No. 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility (hereinafter referred to as the CEF Regulation).

1.8.1. Criteria and deadlines for implementing the future TEN-T network

The TEN-T Regulation proposes two levels of network planning, i.e.:

- comprehensive network and
- core network.

Certain standards apply to the comprehensive and core network which should be implemented by 2030 (for the core network) and by 2050 (for the comprehensive network).

The comprehensive TEN-T network in the Republic of Slovenia, which is supposed to be finished by 2050, includes virtually the entire transport cross, i.e.:

- multimodal transport axis from Koper/Trieste–Divača–Ljubljana–Zidani Most–Pragersko to the Slovenian–Hungarian border, and through Maribor to the Slovenian–Austrian border;
- multimodal transport axis from the Austrian–Slovenian border–Jesenice–Ljubljana–Zidani Most to the Slovenian–Croatian border.

In addition, the following are also included:

- motorway or railway section from Postojna to Jelšane or the border with Croatia,
- Maribor multimodal logistics platform,
- Maribor Edvard Rusjan Airport,
- Portorož Airport,
- motorway section from Ptuj to Gruškovje or the border with Croatia.

Regarding the transport cross running across Slovenia (the comprehensive network), the core network, which should be completed by 2030, does not include the multimodal axis from the Ljubljana Jože Pučnik Airport through Jesenice to the Slovenian–Austrian border and on to Salzburg. Slovenia is also included in the core network via:

- Ljubljana core multimodal logistics platform,
- Koper core multimodal logistics platform,
- Koper core port,
- core Ljubljana Jože Pučnik Airport.

The entire TEN-T network of the EU and some third countries is presented in appendices to the Regulation:

- Appendix I contains maps of the core and comprehensive networks designed by regions and various transport modes: inland waterways, roads, railway passenger and freight connections, airports and road-rail terminals; the Slovenian transport network is shown on a map together with Austria, Czech Republic and Germany (Figures 28 and 29),
- Appendix II contains the list of nodes,
- Appendix III contains a map of third countries (Iceland, Norway, Switzerland, Western Balkans and Turkey).

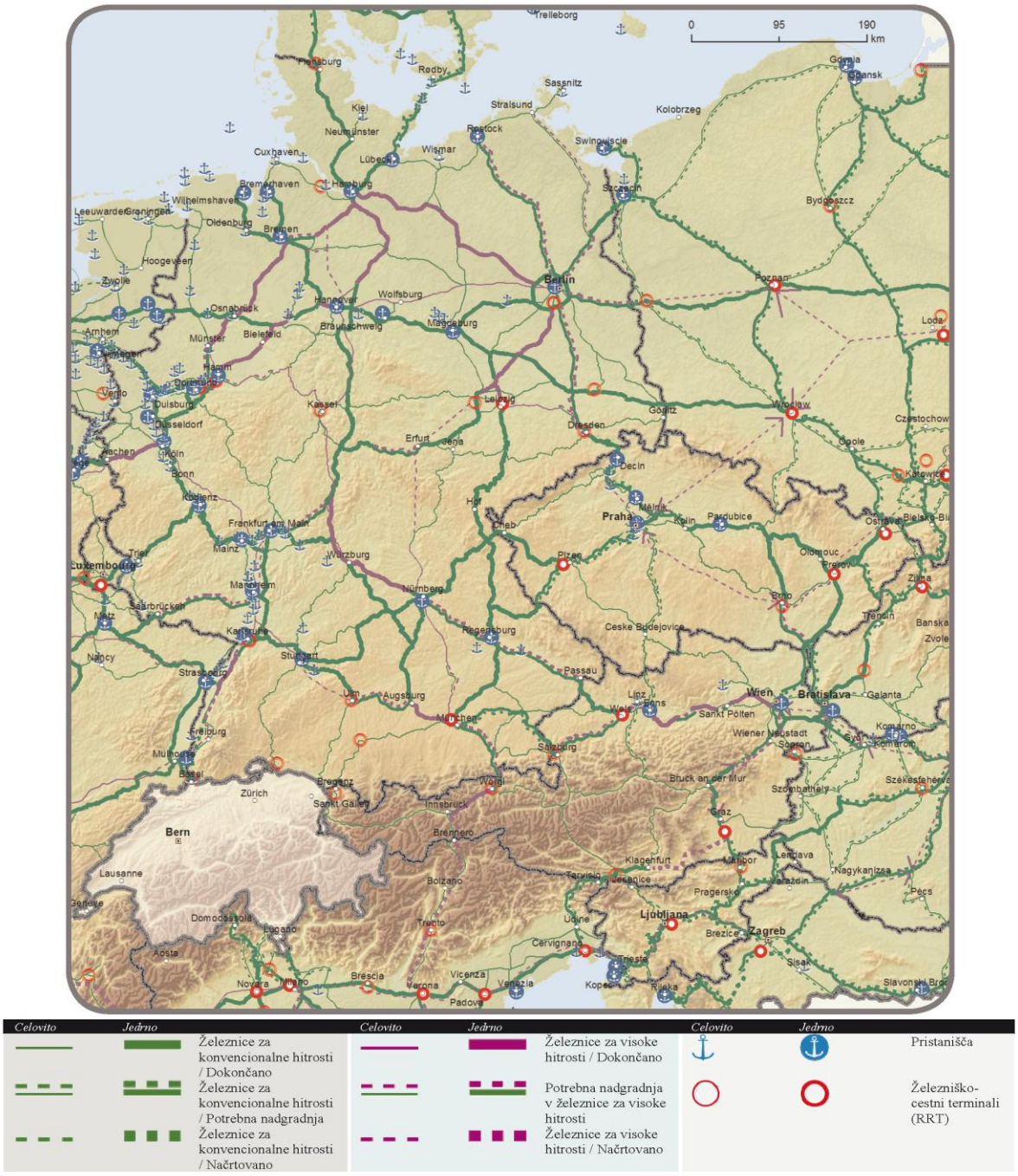


Figure 28 Slovenian transport network in the TEN-T Regulation (railways, ports, road-rail terminals)

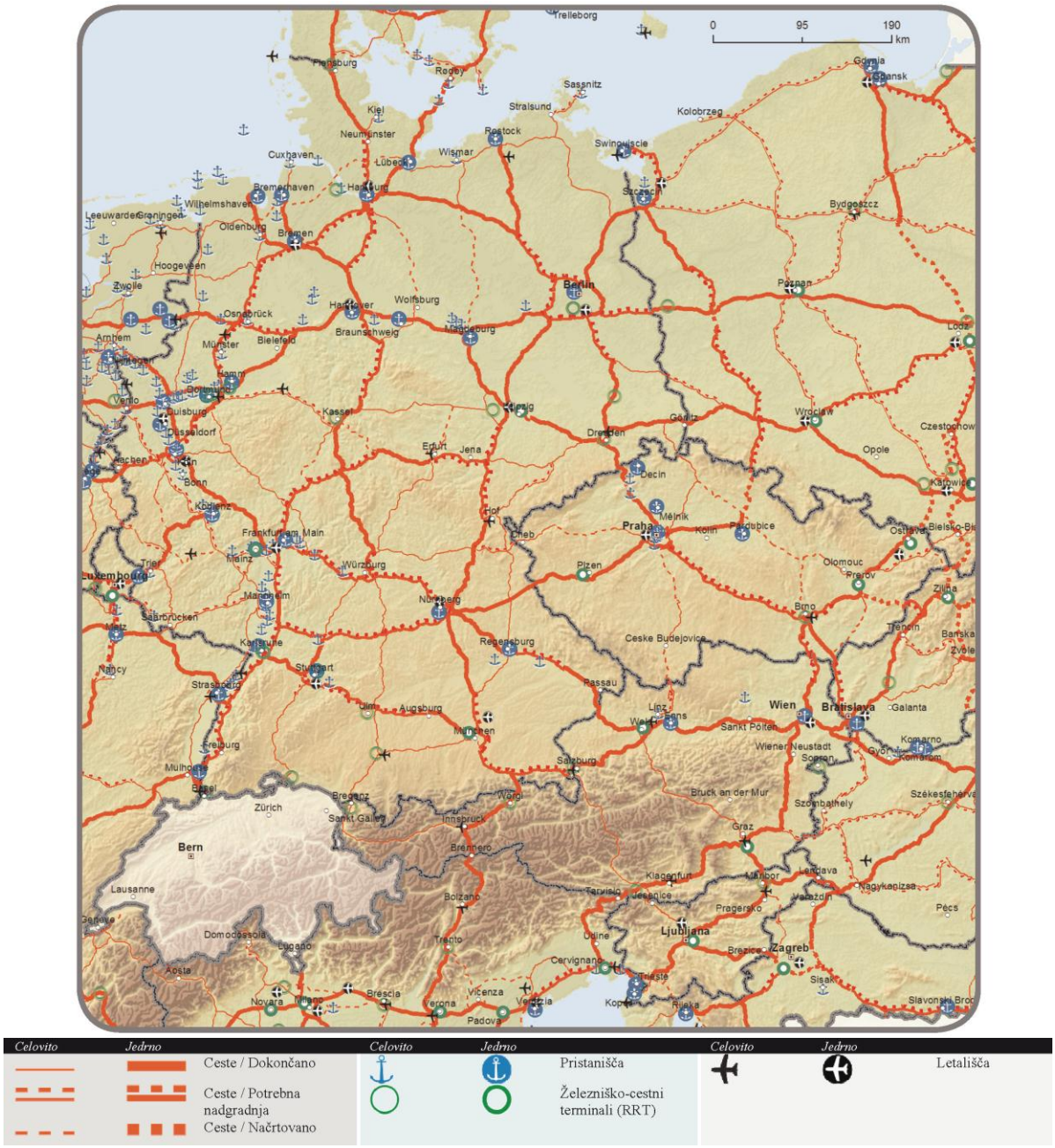


Figure 29 Slovenian transport network in the TEN-T Regulation (roads, ports, road-rail terminals and airports)

The revision clause of the regulation, which facilitates the inclusion or exclusion of new ports, airports or road–rail terminals (road-rail terminals or RRT) if they exceed or fall below the threshold foreseen for inclusion in, or exclusion from, the comprehensive network is significant. It is also foreseen that, by 2023, the Commission will have reviewed the implementation of the core network and, if necessary, proposed modifications.

The most important standards for the comprehensive network which should be implemented by 2050 stipulate:

1. For the field of railway infrastructure:

a. achieving standards in accordance with the Directive on the interoperability of the rail system (Directive 2008/57) and technical specifications in this field,
b. open access to rail terminals (in accordance with Directive 2001/14/EC),
c. ERTMS implementation, and
d. electrification.

2. For the field of road infrastructure:
   a. considering the safety of road infrastructure in accordance with the 2008/96 Directive,
   b. considering safety in tunnels in accordance with the 2004/54 Directive,
   c. interoperability of tolling systems in accordance with the 2004/52 Directive and the Commission's Decision based on this Directive, and
   d. harmonisation of intelligent transport systems with the 2010/40 Directive.

3. For the field of maritime infrastructure:
   a. that the port should be connected to railways, roads and, if possible, to inland waterways,
   b. that the port has at least one terminal open (accessible) to all users under the same conditions,
   c. that Member States provide necessary equipment to assist ships in environmental performance of ships in ports, especially in accordance with the 2000/59 Directive with regard to ballast water,
   d. to have introduced SafeSeaNet in accordance with the 2002/59 Directive, and
   e. that it offers e-maritime services, including the single window (2010/65 Directive).

4. For the field of air transport infrastructure:
   a. that each airport has at least one terminal available to all carriers in a non-discriminatory manner and that it charges transparent, appropriate and fair fees,
   b. that it considers Regulation No. 300/2008 on common rules on civil aviation security;
   c. that Member States must ensure that the air transport management infrastructure enables the implementation of the Single European Sky in accordance with Regulation (EC) No. 549/2004, Regulation (EC) No. 550/2004, Regulation (EC) No. 551/2004, and Regulation (EC) No. 552/2004 as well as air transport, in order to improve the operations and longevity of the European air system and to use the executive rules and specifications of the Union.

5. Infrastructure for multimodal transport should ensure:
   a. non-discrimination,
   b. the ability to move from one mode of transport to another,
   c. accessibility and transfer of information about cargo or passengers,
   d. use of telematic applications (passengers) to simplify undisturbed passenger transport,
   e. appropriate equipment of cargo terminals: lifts, conveyor belts etc.

6. Infrastructure of inland waterways: not relevant for Slovenia, because there are none.

In addition to the standards for the comprehensive network, the standards for the core network as adopted by the EU Council in March 2012 and which should be implemented by 2030 determine as follows:

1. For the field of railway infrastructure:
    a. electrification,
    b. freight lines of the core network with at least 22.5 t of axle load, a speed of 100 km/h and the possibility of accommodating trains up to 740 m in length,
    c. ERTMS implementation, and
    d. track gauge of 1,435 mm.

2. For the field of road infrastructure:
    a. several types of road are possible in the comprehensive network, only motorways and expressways are integrated in the core network,
    b. establishment of safe and secure car parks for users, approximately every 100 km,
    c. the possibility of using alternative clean fuels.

3. For the field of maritime infrastructure:
    a. the possibility of using alternative clean fuels.

4. For the field of maritime infrastructure:
    a. the possibility of using alternative clean fuels.

The Commission may decide on variations and exceptions to the aforementioned requirements.

To make the implementation of the TEN-T network easier, the Regulation introduces core network corridors and retains the possibility of appointing European coordinators.

1.8.2. Comparison of TEN-T criteria for the core network and the actual situation of infrastructure in the Republic of Slovenia

We estimate that railway infrastructure will require most changes, while we believe that the standards in the field of motorways, maritime and air transport are practically ensured (minor adjustments might be required to ensure infrastructure for the use of alternative fuels).

If we compare the above requirements for railway infrastructure with the existing situation (RNE corridors C 08 and C 11 present the source), then we reach the following findings:

Table 4 Comparison of TEN-T criteria

Section	Axle pressure – in tons	Speed (km/h)	Length of train set – in metres	Electrification	TEN-T suitability
Koper – Divača	22.5	To 80	515	YES	NO
Trst – Divača	22.5	To 75	600	YES	NO
Divača – Ljubljana	22.5 (with limitations)	To 100	600	YES	NO
Ljubljana – Pragersko	22,5 to Zidani Most	To 100	600	YES	NO
	20 from Zidani Most to Pragersko	Some sections to 120			
Pragersko – Hungarian border*	20	To 100	600	NO	NO
		To 80 Ormož–Hodoš			
Pragersko – Maribor	22.5	To 120	590	YES	NO
Maribor – Gradec	20	To 80	560	YES	NO
Beljak – Jesenice	22.5 (with limitations)	To 100	600	YES	YES – but not in the core network
Jesenice – Ljubljana	22.5 (with limitations)	To 100	600	YES	YES – but not in the core network
Ljubljana – Dobova	22.5 (with limitations)	To 120	570	YES	NO

* An upgrade project to guarantee TEN-T standards (speed, axle pressure, electrification) is in progress and will be concluded in 2015.
Source: MInf

Key:

- underlined text: the parameter does not comply with the new proposal for standards for the TEN-T network
- ERTMS/ETCS is a European system of train management and control which facilitates the interoperability of trains independently of the system of signal security devices with which drag devices are equipped and is being introduced in Corridor D. Corridor D is the international railway corridor that applies to pan-European corridor V.

1.8.3. Implementation of the TEN-T network from 2014 to 2020

The proposal of the TEN-T Regulation also accompanied the proposal of the CEF Regulation (Connecting Europe Facility) that provides the finances for the implementation of the TEN-T network in the 2014–2020 period (next financial perspective). The proposal of this Regulation determines not only the amount of funds for transport, but also for energy and telecommunications infrastructure.

In the field of transport and energy, this instrument will change the current TEN financial aid. The field of telecommunications will be added later. The proposer of the Regulation believes that all three fields of infrastructure are interconnected, that they are conditions for the final unification of the European market and that they can stimulate the competitiveness of the EU economy in a time of crisis.

The financial provisions of the CEF Regulation will be considered in a special chapter. It is important that 9 core network corridors were formed as the tool for the better implementation of the core network in the next 2014–2020 financial perspective.

Slovenia is included in the Baltic-Adriatic corridor (i.e. with the port of Koper) and in the Mediterranean corridor. When Croatia joined the EU, the Ljubljana–Dobova railway section also became part of the Mediterranean corridor.

1 – Baltic-Adriatic corridor
3 – Mediterranean corridor

Figure 30 Core network corridors

1.9. ANALYSIS OF COMPETITIVENESS OF TRANSPORT CORRIDORS

As has often been mentioned, Slovenia is located at the crossroads of two important transport axes, i.e. corridors X and V. Similarly, the Slovenian transport network is also designed within the framework of the comprehensive TEN-T or core network, with the exception of the section from Ljubljana to Jesenice and towards Villach and Salzburg. For the latter section, Slovenia has made every effort during the discussion of the Regulation at the EU Council and European Parliament to make it part of the core network, but failed. The reason for this was Austria's view that they cannot afford another major investment in the Tauern Rail Tunnel (besides Brenner and Koralm) which would guarantee the standards for the core network on this route by 2030.

Despite this Slovenia continues to strengthen the value of this route by designing the so-called Western-Balkan corridor from Munich to Istanbul, and consequently by integrating

this axis with railway freight transport corridors in accordance with Regulation 913/2010. Later, it will try to include it in the TEN-T core network, since a revision of this legislation is planned for 2023. The precondition is that the countries on this axis sign a letter of intent to establish the corridor. Slovenia has already sent the proposal of a letter of intent to all countries on this axis.

Such a corridor is also supported by all railway operators in all the countries integrated in this corridor (including Croatian Railways – HŽ, the Austrian Infrastructure Management Company – ÖBB, Slovenian Railways – SŽ etc.).

Certain alternatives or parallel corridors are also emerging for the mentioned corridors. Therefore, it is important to know for future decision-making about the eligibility of investments in railway infrastructure, and whether transport axes that cross Slovenia can maintain their competitive advantages over alternative ones or parallel transport connections.

A study was prepared for this purpose ("Advantages of transport corridors crossing Slovenia with regard to competitive corridors") the purpose of which was to establish the advantages or deficiencies (weaknesses) of international transport, especially railway corridors, that cross Slovenia, with regard to competitive corridors.

Three routes were selected for the comparison, i.e.: corridors V and X, and Bratislava–Adriatic (ports). On all corridors, the routes through Slovenia and alternative routes through the neighbouring country or countries were compared:

1. Corridor V:
   - route through Slovenia: Venice – Ljubljana – Pragersko – Budapest – Lviv
   - route through neighbouring country (Austria): Venice –Villach – Graz –Vienna – Bratislava – Žilina – Lviv
2. Corridor X:
   - route through Slovenia: Salzburg – Villach – Ljubljana – Zagreb – Belgrade
   - route through neighbouring country (Austria): Salzburg – Vienna – Bratislava – Budapest – Belgrade
3. Bratislava – Adriatic route (Adria corridor):
   - route through Slovenia: Bratislava – Vienna – Graz – Maribor – Ljubljana – Koper
   - routes through neighbouring countries:
     - through Austria: Bratislava – Vienna – Graz – Villach – Trieste
     - through Croatia: Bratislava – Botovo – Zagreb – Rijeka
     - through Bosnia and Herzegovina: Bratislava – Budapest – Osijek – Sarajevo – Ploče

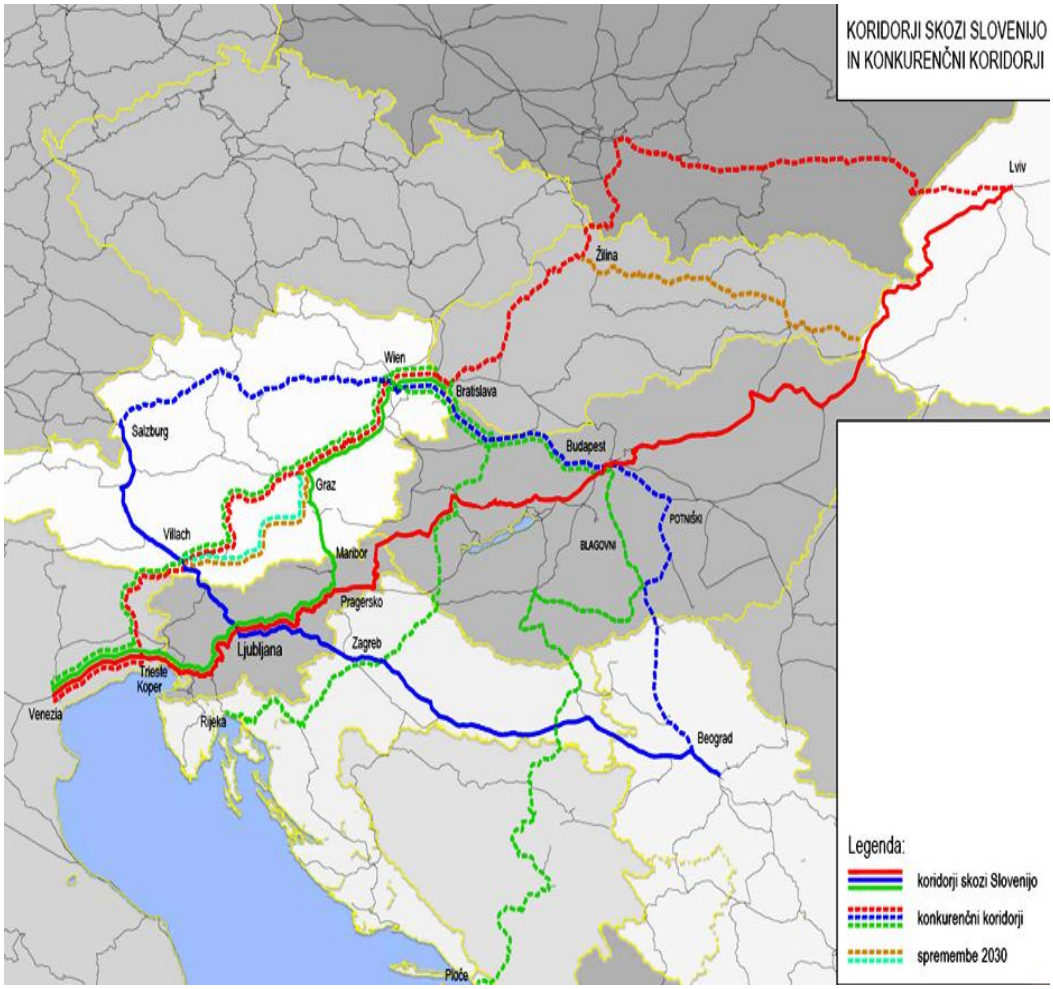
The model transport comparison of Slovenian and competitive corridors shows the objective advantages of corridors crossing Slovenia.

The SW–NE direction (corridor V) that runs through Slovenia, with regard to goods and passenger transport, is around 100 km shorter than its competitors. Travel times are also 7% shorter if Slovenian and the competitive corridor are equal in technical terms. The road and rail corridors that run through Slovenia, attract more goods and passenger transport than the competitors, i.e. 4% more goods and 20% more passenger transport. This means that the route through Slovenia is more attractive, useful, efficient and appropriate than the

competitors. By modernising the railway corridor that runs through Slovenia, the quantity of freight transported by railway is significantly higher than the quantity on the competitive corridor (by approx. 19% through Slovenia and 6% on the competitive corridor). Due to the shorter connection, the use of energy is 7% less on corridor V that runs through Slovenia, and CO_2 emissions are 7% less than on the competing corridor.

Therefore, there is no doubt that corridor V is better from the aspect of transport, energy and air pollution than the competitor.

The NW–SE direction (railway corridor X) that runs through Slovenia is also shorter than its competitor, i.e. by more than 100 km for freight transport and more than 200 km for passenger transport. Travel times are also shorter, i.e. for freight transport around 12% and for passenger transport around 20%. The railway corridor that runs through Slovenia also attracts 12% more freight transport due to the shorter connection. The competing corridor is more favourable for passenger transport, mostly because it connects cities (Vienna, Budapest) and Bratislava (which is twice the size of Ljubljana), thus attracting 34% more passengers than those travelling through Slovenia. A modernised railway corridor through Slovenia attracts some freight from the competitive corridor, although this was also reconstructed (the quantity of goods on the route through Slovenia increases by 50%; on the competitive corridor it decreases by 11%). Passenger rail transport in any case is more favourable to the competiing corridor. When transporting freight through Slovenia or corridor X, 12% less energy is consumed and air pollution is 12% lower.



Source: MInf

Figure 31 Corridors through Slovenia and competing corridors

A comparison with the competing corridors Adria (Bratislava – Adriatic), i.e. oriented towards the Adriatic Sea, is not entirely feasible, because the routes cannot be compared by mutual points.
However, we can establish that the corridor running through Slovenia is in almost all respects, especially with regard to attracting transport, more favourable than the competing corridors.

Therefore, corridors V and X that run through Slovenia objectively have more advantages than their competitors.

Other methods of transport also have competitive advantages, i.e. road, maritime and air transport. This makes both corridors multi-modal and more attractive from the aspect of competitive advantages and attracting transport. The study is relevant to the eligibility of investments in transport infrastructure, since it establishes that with reconstructed (mostly railway) infrastructure, Slovenia would attract international transport flows, thus decrease road transport, enabling the development of logistics, guaranteeing cargo and passengers to railway operators etc.

1.10. INFRASTRUCTURE FOR THE USE OF ALTERNATIVE FUELS IN TRANSPORT

On 25 January 2013, the European Commission presented the Proposal for a directive on the deployment of alternative fuels infrastructure. By using alternative fuels, Europe would reduce its dependence on the import of fossil fuels and negative impacts on the environment. By developing, investing and implementing solutions for the use of alternative fuels, this also stimulates research and development, as well as creating new jobs. In this field, Europe could take a leading role in the world. The lack of infrastructure for these fuels and common technical specifications for interfaces between vehicles and infrastructure constitute a great obstacle to introducing alternative fuels in the market and their acceptance by consumers.

With the proposed directive, EU has to ensure the construction of alternative fuels infrastructure and the introduction of common technical specifications for the infrastructure in the EU. For this purpose, it is determined obligatory coverage with minimum infrastructure for electrical energy, hydrogen and natural gas (compressed natural gas – CNG and liquefied natural gas – LNG); it is essential that consumers accept these alternative fuels (recognition in the market), thus ensuring the industry's interest in further developing and using of this technology. Alternative fuels also include bio-fuels, synthetic fuels and liquefied petroleum gas (LPG).

The Directive also determined the method of informing consumers about these fuels.

The proposal of the Directive was considered in the second half of 2013 under the Lithuanian Presidency of the Council of the European Union, and the TTE Council adopted it in December 2013. Under the Greek Presidency in the first half of 2014, the proposal of the Directive was also harmonised by the Council and the European Parliament. Finally, Directive waspublished on 22. October 2014 **(Directive 2014/94/EU of the European Parliament and of the Council on the deployment of alternative fuels infrastructure)**.

Directive will have an important effect on the development of infrastructure. It stipulates that each EU Member State should adopt a national programme in this field, thus determining the coverage of alternative fuel infrastructure on its territory for:

- electric vehicles by 2020,
- compressed natural gas for private vehicles by 2020,
- liquefied natural gas for goods vehicles and ships by 2025,
- hydrogen for motor vehicles by 2025,
- for supplying electric energy to ships from land by 2025, and
- for supplying electric energy to aircraft at airports by 2025.

2. MINISTRY RESPONSIBLE FOR TRANSPORT

2.1. ORGANISATION OF THE MINISTRY OF INFRASTRUCTURE (MZI)

The Ministry of Infrastructure is responsible for transport in the Republic of Slovenia, established for the implementation of tasks in the field of rail, air, transport and maritime transport, navigation on inland waterways and road transport, except the safety supervision of road transport, tasks in the field of transport infrastructure and cable installations, tasks in the field of the energy sector and mining, and tasks in the field of efficient use and renewable energy sources.

The mentioned tasks are implemented at: the minister's office, the Internal Audit Service, Accident Investigation Service, International Cooperation Service, Investment Monitoring and Finance Division, Secretariat, and three directorates - the Infrastructure Directorate, Transport Directorate and Energy Directorate.

The minister's office performs expert, consulting, organisational, coordination, administrative and technical tasks that are connected with the minister's function, and tasks in the field of public relations, protocol matters and ensuring public information.

The Internal Audit Service performs tasks of supervising the budgetary costs of the ministry and its bodies, and the use of EU funds within the ministry and its bodies; the supervision of operations of internal control to ensure the legality and efficiency of the operations of the ministry and its bodies; supervision of the implementation of internal regulations and instructions on the operations of the ministry and its bodies; supervision of the reliability of accounting information or the accuracy and level of completion of the records of the ministry and its bodies; ensuring the prevention of errors and fraud within the scope of the ministry and its bodies; ensuring the protection of funds and assets of the ministry and its bodies; the coordination of procedures in the implementation of supervision by the supervisory institutions of the Republic of Slovenia and the EU, i.e. the operations of the ministry and its bodies, and consulting and adopting decisions for the establishment and improvement of operations of risk management systems, controls and operating procedures at the ministry and its bodies.

The Accident and Incident Investigation Services independently investigate accidents, serious incidents and incidents in civil aviation, in rail transport and maritime transport, and provides information about such events for the purpose of preventing air, rail and maritime accidents and incidents, and to reduce the risk of their occurrence in the future with the aim of improving safety in air, rail and maritime transport.

The International Cooperation Service performs expert tasks that refer to the monitoring, coordination and harmonisation of European matters and international relations in the work areas of the ministry, the Government of the Republic of Slovenia, EU institutions and other bodies and organisations, as well as cooperation with these bodies, the preparation of materials for councils of ministers of transport, the implementation of tasks in the field of harmonising and monitoring the implementation of the EU legal order; monitoring and coordinating the realisation of tasks that arise from the provisions of the Agreement between the EU and the Republic of Slovenia in the field of transport, and cooperation in the preparation of national programmes and strategies for drawing funds from EU funds and

other funds in accordance with the provisions and guidelines of the EU, and cooperation in the technical assistance project for the field of administrative qualification of the realisation of national programmes, strategies and tasks in the field of public relations, protocol matters and the provision of public information.

The Finance Division performs expert tasks that refer to the preparation and formation of a harmonised financial plan for the ministry and its bodies; the harmonisation and preparation of the final report of the ministry and its bodies; the execution of the financial plan and appertaining documents of the ministry and its bodies; supervision of the use of budgetary finances of the ministry and its bodies; ensuring and managing the financial operations of the ministry and the financial operations of the Slovenian Inspectorate for Transport, Energy and the Environment; the financial assessment of contracts concluded by the ministry and the Inspectorate for Transport, Energy and the Environment; the implementation and maintenance of necessary operational manuals for the implementation of management, financing and supervision of projects co-financed by European funds; coordination of procedures for the use of European funds among management structures in accordance with the rules on drawing European funds; receiving payments from the contribution of Communities of the European Commission within the scope of the centralised management of approved European funds and the management of appropriate interest sub-accounts; the implementation of control tasks for drawing European funds within the scope of administrative control on site and the preparation of appropriate records and reports performed within the scope of the Budget Division and European Funds Division.

The Secretariat performs the tasks of appertaining, methodological and expert technical tasks in the field of the ministry's organisation, material operations and work programming, HR management, documentation operations, quality management, IT, legal matters, public procurement, defence matters and expert matters in relation to membership of NATO.
These tasks of the Secretariat are performed by the Legal Division, Administrative Affairs and Complaints Division, HR Division, General Matters Division, the Main Office, the Public Procurement Division and IT Division.

The Infrastructure Directorate performs expert and administrative tasks that refer to development, investments, maintenance and management in the field of public rail and road infrastructure, and tasks that refer to the development of air transport and airport infrastructure in the field of aviation and the maritime sector and port infrastructure.
It also conducts tasks in connection with stimulating the development and introduction of intelligent transport systems.
The tasks of the Infrastructure Directorate are performed by the Road Sector, Railway Sector, Aviation Sector and Maritime Sector.

The Transport Directorate performs expert tasks that refer to the transport policy of the Republic of Slovenia, intermodal transport and logistics, including the strategy of regional development and structural policy of the Republic of Slovenia, the harmonisation of transport connections with neighbouring states and within the EU, and sustainable mobility measures. The Transport Directorate is responsible for horizontal connections between individual types of transportation; it monitors data on transport and transport currents, their trends, data on activities and trends in the field of European transport policy, situation monitoring and the monitoring of the situation in the transport services market in internal and international road and cable transport. It proposes measures to enhance and regulate these activities, to stimulate the development of environmentally-friendly forms of transport, and to stimulate intermodal transport, and proposes measures for the development and regulation of transport. The work of the Transport Directorate also includes monitoring and coordinating the realisation of tasks arising from the provisions of the Agreement between the EU and the Republic of Slovenia in the field of transport, performing administrative and expert tasks that refer to transport safety, regulating social legislation and all conditions to ensure the

undisturbed flow of all individual types of transport. The Transport Directorate drafts laws in the field of operations and executive regulations, and it is also responsible for their implementation. It manages the implementation of public services in the field of operations, concession contracts and agreements in the field of individual types of transport. It manages the preparation and implementation of the European Mobility Week in the Republic of Slovenia. It drafts expert bases for public procurement procedures and is responsible for the implementation of contracts. It cooperates in the work of commissions and boards of the European Commission and international organisations. It is also responsible for introducing the contents of sustainable mobility in municipal spatial plans. The Directorate manages administrative procedures and monitors the content of the work of inspectors who have competences in individual types of transport. It also notifies the public, and economic and expert associations as well as civil society organisations about its operations, and cooperates with the Information Commissioner.
The tasks in the working field of the Transport Directorate are performed by the Public Passenger Transport and Cableways Sector and the Road Transport Sector.

The Energy Directorate ensures the implementation of administrative tasks and measures on the basis of laws and the National Energy Programme, as well as action plans and operational programmes in order to ensure a reliable supply of energy, the efficient use of energy and renewable as well as other energy resources, and for the mining sector. The Directorate especially performs the following tasks:
implements a comprehensive state energy policy (process of acquisition and processing, production, transfer, distribution and supply of energy, efficient use and renewable energy sources),
ensures efficient use of mineral materials by allocating mining rights for research and the exploitation of all types of mineral materials,
prepares and implements legal and other acts for all work fields of the Directorate,
monitors EU regulations; adapts national laws; cooperates on the preparation of drafts of EU regulations and other acts; prepares the standpoints of the Republic of Slovenia for EU authorities and working bodies,
manages administrative procedures on the second level in the fields of the energy sector, the efficient use of energy, renewable energy sources and mining, as well as performing other administrative tasks of similar complexity,
cooperates in bilateral and multilateral or regional energy frameworks.
The above-mentioned tasks in the working fields of the Energy Directorate are performed by the Energy and Mining Sector and the Efficient Use and Renewable Energy Sources Sector.

Three ministerial bodies also operate within the Ministry of Infrastructure:

1. the Slovenian Roads Agency, which performs professional and technical, administrative, organisational and developmental tasks in the fields of state road construction, maintenance and protection, as well as traffic protection, supervision of roads, administrative tasks in the field of road tolls, managing records on state roads, other tasks stipulated by law and executive acts referring to public roads.
2. The Slovenian Maritime Administration, which performs administrative and professional tasks in the fields of maritime and port infrastructure, supervision of work in ports, other areas of territorial waters and inner maritime waters; navigation safety; the conduct of maritime traffic and maintenance of navigation and waterway safety facilities; inspection of the implementation of regulations on maritime traffic and port infrastructure; inspection of the implementation of regulations on navigation on inland waterways.
3. The Transport, Energy and Spatial Planning Inspectorate performs inspection supervision of the implementation of regulations in the fields of road and rail transport, traffic infrastructure for all types of traffic, and in the field of cable devices and safety on ski slopes; inspection of the implementation of the provisions of regulations on road traffic, regulations issued on the basis of these provisions,

regulations in relation to the work of entities that train candidates for driving licences, and implements programmes for beginner drivers and programmes of additional training for drivers and persons accompanying exceptional transports, regulations regulating the conditions for marketing motor vehicles and trailers, their registration and participation in road traffic, the conditions for performing tasks of technical services, expert work and organisation of regulations on the conditions for transporting hazardous goods for individual types of traffic; inspection supervision of the execution of regulations and general acts with regard to the regulation of space and settlements, the construction of facilities and the implementation of construction, the fulfilment of significant demands for buildings, residential matters and land survey activities; inspection supervision of the execution of regulations and general acts on electric power and thermal energy, of movable pressure equipment and equipment under pressure in traffic and use, of the efficient use of energy and the tasks of inspection supervision of the implementation of the provisions of the act on mining and related regulations, technical regulations and regulations on health and safety at work, as well as other regulations on researching and exploiting mineral materials as well as in the implementation of other mining work.

2.2. ANALYSIS OF THE ADMINISTRATIVE QUALIFICATIONS OF THE MINISTRY OF INFRASTRUCTURE FOR IMPLEMENTING ITS MEASURES IN THE 2014–2020 FINANCIAL PERSPECTIVE

For the area of transport, the Ministry of Infrastructure in the 2014–2020 period will be in a role of an intermediate body and at the same time the beneficiary of two thematic objectives of the EC as defined by Regulation No. 1303/2013, i.e. thematic objective no. 4, Supporting the shift towards a low-carbon economy in all sectors, and thematic objective no. 7, Promoting sustainable transport and removing bottlenecks in key network infrastructures. Within the scope of these two objectives, the Operational Programme for the implementation of European Cohesion Policy in the 2014–2020 period involves measures which the Ministry of Infrastructure will implement during the next financial perspective with EU funds with an emphasis on priority measures which are related to continuing the modernisation of railway infrastructure and promoting sustainable mobility.

Transport development strategy in the Republic of Slovenia is being prepared, and will on the basis of traffic, economic and environmental indicators, specify priority investments in the development of transport and transport infrastructure. All relevant offices of the Ministry of Infrastructure are included in the preparation of the Strategy, with the purpose of prioritising the implementation of key measures and achieving greater (synergistic) effects by merging the objectives of individual measures.

The measures were proposed for co-financing by the cohesion fund (investments in railway infrastructure, missing highway sections, investments in port infrastructure, projects promoting sustainable mobility) and by the funds of the European Regional Development Fund (state roads that are connected to the TEN-T network and sustainable mobility projects) and represent the continuation of the investment cycle that started in the 2007–2013 financial period.

Beneficiaries in the field of transport and transport infrastructure within the Ministry of Infrastructure will presumably be the Infrastructure Directorate (Railway Sector) and the Transport Directorate (Public Passenger Transport and Cableways Sector), as well as the Motorway Company of the Republic of Slovenia, Slovenian Roads Agency, the Slovenian

Maritime Administration and other beneficiaries (self-governing local communities and the public sector, in some cases the private sector).

The areas of transport policy which will be proposed by the Ministry of Infrastructure for implementation with cohesion policy funds for the 2014–2020 period will remain the same as in the current 2007–2013 financial perspective; whereas the number of major measures as well as available funds for these measures are decreasing, the number of measures for promoting sustainable mobility is increasing.

In comparison with the current financial perspective, the reduction of available funds is typical practically for all fields of transport, especially regarding the construction of highway sections and state road sections, as well as for the area of railway infrastructure, which, despite this remains the first priority. At the same time, funds are increasing and the fields of measures within the scope of sustainable mobility are expanding.

Technical aid within the scope of the Cohesion Fund will also be available to strengthen administrative capacities, whereby the key measure will be to transfer of know-how and the employees structure in the new 2014–2020 programming period. In cooperation with the managing authority, we will dedicate special attention to strengthening the administrative capacities of bodies included in the implementation of the European cohesion policy and the beneficiaries of these funds by implementing training and transferring know-how among employees.

In line with that, the key tasks of the Ministry of Infrastructure to ensure sufficient administrative capacity for the implementation of the 2014–2020 cohesion policy will be:

- to maintain the qualified human resources who implement procedures for the current financial perspective also for the purpose of implementing the tasks of the next programme period;
- considering the changes in priority areas and considering the amount of allocated funds, to identify the needs for additional hiring or re-positioning of existing qualified human resources;
- to additionally educate and train human resources with regard to novelties and best practices of the 2014–2020 Cohesion Policy in all areas referring to their area of work and with particular emphasis on public procurement, project management and administrative control.

2.2.1. The field of railway infrastructure

Stimulating environmentally-friendly transport and enforcing the principles of multi-modality must take the priority in eliminating the structural weaknesses in the infrastructure development, primarily in the field of railway infrastructure. Slovenia follows the requirements of European transport policy for establishing a trans-European network. In the past, development focused mainly on improving motorway network, while other areas lagged behind in development. This led to a standstill, especially in the field of railway infrastructure, due to the lack of funds for investments in the national budget and the lack of other necessary sources of investment financing. The field of railway infrastructure in the current and the next financial period is considered a priority, so the highest share of funds available from the cohesion fund is dedicated to this field.

The preparation of projects referring to investments and new construction (construction of new public railway infrastructure, the management of investments in public railway infrastructure and implementation of project documentation audits) is in accordance with the Act Amending the Railway Transport Act (ZZeIP–H, Official Gazette of the Republic of Slovenia, No. 92/99) implemented by the company that operates as a state agent (state

engineer) and manages investments referring to new construction, according to the "in-house" principle. The Ministry of Infrastructure acts as an investor and contracting authority, which means that, public procurement procedures are implemented within the ministry. State agent implements other activities relevant to the management of individual projects.

Railway infrastructure upgrading projects are in accordance with the Act Amending the Railway Transport Act (ZZeIP–H, Official Gazette of the Republic of Slovenia, No. 92/99) implemented within the ministry or at the Infrastructure Directorate, Railway Sector. The Act Amending the Railway Transport Act (ZZeIP–H, Official Gazette of the Republic of Slovenia, No. 92/99) defines upgrading of an existing railway infrastructure as a change in a railway subsystem or part of a subsystem that improves the entire operations of the subsystem. Operational Programme for the implementation of European Cohesion Policy in the 2014–2020 period involves only measures that in accordance with the Act Amending the Railway Transport Act (ZZeIP–H, Official Gazette of the Republic of Slovenia, No. 92/99) represent upgrades; according to which the beneficiary is the Ministry of Infrastructure.

The tasks of managing public railway infrastructure are implemented by the public railway infrastructure manager based on the contract concluded with the Government. Management is implemented by the company SŽ–Infrastruktura, d.o.o., i.e. the company for public railway infrastructure maintenance and implementation of other management tasks. Public railway infrastructure management encompasses the preparation of the maintenance plan of the existing public railway infrastructure, the preparation of expert bases for new developmental projects for railway infrastructure, the conclusion of legal transactions connected to public railway infrastructure management, the supervision of investment works for the purpose of ensuring the safety of railway traffic, the issue of consents for interventions in the railway and protective railway line and the publication of the network programme, as well as the management of railway station facilities.

With the purpose of achieving optimum efficiency and sufficient administrative capacity to manage and implement priority investments in the field of railway infrastructure by using 2014–2020 Cohesion Policy funds, the Ministry of Infrastructure will strive to retain qualified HR who are managing procedures within the 2007–2013 technical aid project and who have the know-how and experience, and will ensure appropriate upgrade of their knowledge and continuation of their work in the new programme period within the scope of the 2014–2020 technical aid project. If there is a need for the additional employment of resources, these will be employed within the 2014–2020 technical aid project.

Railway network upgrade projects will be planned, prepared and managed by the Ministry of Infrastructure, which within the Infrastructure Directorate allready has appropriate and qualified HR for the performance of these procedures. Considering the experiences acquired during the current 2007–2013 financial perspective, within the scope of which almost three times more funds from the Cohesion Fund were available for investments in railway infrastructure, the Ministry of Infrastructure will use the funds of 2014–2020 technical aid and strive to improve administrative qualifications, especially in the sense of constantly upgrading knowledge and qualifications for managing such demanding projects and ensuring appropriate capacities.

Within the scope of project planning and preparation, activities related to financial planning, the review and assessment of investment documentation, organisation and management of the preparation of investment documentation, organisation and management of the preparation of the application for EU funds, the preparation of public tenders for acquiring contractors, etc. will be implemented. Project managers' tasks will also include cooperation on implementing public procurement procedures, and monitoring and reporting, tasks as well as the preparation of claims for payments and reimbursements etc.

2.2.2. The field of sustainable mobility

The current situation in the field of sustainable mobility and the use of public passenger transport in Slovenia is weak therefore, the implementation of measures for sustainable mobility in the 2014–2020 period remains one of the main priorities of the Ministry of Infrastructure. By introducing sustainable mobility at all levels, we want to significantly contribute to reducing the negative effects of transport on the environment, thereby improving the quality of living space in urban areas and traffic safety, and increasing the mobility of population in remote areas.

Slovenia's activities in the field of sustainable mobility are implemented with the purpose of ensuring access by public transport or by ensuring conditions for sustainable mobility, which includes walking and cycling.

To improve public passenger transport, the development of comprehensive sustainable and accessible mobility in cities will be established; transport modes will be modernised, and by that will achieve high environmental standards; and advanced technologies for efficient monitoring and public passenger transport will be introduced. Synergies with the construction of infrastructure will be ensured by selecting those projects/measures that have the maximum synergy effects in terms of pollution indicators (air) as well as mobility indicators (passenger km). Along with appropriate infrastructural conditions for the operation of integrated public passenger transport, it will be necessary to approach comprehensive solutions with the aid of guidelines for the implementation of comprehensive transport strategies.

Measures proposed by the Ministry of Infrastructure for implementation with available EU funds (CF and ERDF) will be prepared and managed within the scope of the Ministry of Infrastructure (Transport Directorate, Public Passenger Transport and Cableways) by qualified HR who perform their tasks in the field of sustainable mobility in the current financial perspective, within which important bases for the further development of this area were established. Considering the fact that the activities in the future financial perspective will be additionally expanded and intensified in comparison with the current financial perspective, additional HR will be required to establish appropriate administrative capacity to manage procedures in the implementation of projects. Considering the planned activities, the ministry will need to review the needs for additional HR, which will be ensured within the scope of 2014–2020 technical aid projects. The priority is to maintain qualified staff who have operated in the field of sustainable mobility within the scope of the 2007–2013 technical aid project, and to employ the necessary human resources in the shortest possible time with the 2014–2020 technical aid funds.

The beneficiaries of funds in the field of sustainable mobility will be the Ministry of Infrastructure (Transport Directorate), local communities and private law entities. The instruments for determining beneficiaries are public call and direct confirmation of operation.

The measures include the continuation and rational upgrading of projects already being implemented (integration of public passenger transport, park and ride projects), whereas higher share of funds from the Cohesion Fund and ERDF and wider range of measures is designated to sustainable mobility in the 2014–2020 period. In cases when measures to stimulate sustainable mobility are beyond the scope of transport, the 2014–2020 Cohesion Policy implementation procedures will also include associates of the Energy Directorate with their contributions.

The key tasks which will be implemented by employees within the Public Passenger Transport and Cableways Sector in relation to 2014–2020 Cohesion Policy procedures are:

- the preparation and monitoring of the implementation of measures in the field of public passenger transport and sustainable mobility,
- the preparation of applications and public tenders for the acquisition of EU funds,
- cooperation on the implementation of public procurement procedures and public tenders, in accordance with the internal acts of the Ministry of Infrastructure in this field,
- cooperation on payment and reimbursement procedures,
- the implementation of project management or contract custodian tasks (in the case of public tenders) arising from national legal bases and contractual relations with participants in the implementation of projects,
- monitoring and reporting tasks at the project level, priority guidelines,
- reporting on irregularities at the project level,
- cooperation in project and working groups on the preparation of instructions and other area materials for the programme period.

2.2.3. Road infrastructure

In the field of road infrastructure, measures related to the completion of the motorway network in the Republic of Slovenia will be implemented in the next financial perspective, since this represents the continuation of the construction of the motorway network in the current financial perspectives. Measures related to the construction of necessary sections of state roads outside the TEN-T network, which are the key connections for the economic development of the region, will be also a priority. The beneficiaries eligible of the Cohesion Fund (motorway network) and ERDF funds are the Motorway Company of the Republic of Slovenia or the Slovenian Roads Agency.

The Infrastructure Directorate of the Ministry of Infrastructure, Roads Sector, will act as the intermediate body where project implementation monitoring tasks will be executed. The project custodians at the Ministry of Infrastructure in the 2014–2020 period will be employees who have worked in the current perspective on much larger number and scale of projects, therefore, no major deviations are expected from the aspect of administrative qualifications regarding this field.

To promote sustainable transport and eliminate bottlenecks in key network infrastructures, in the 2014–2020 period Slovenia will invest in improving regional mobility by connecting secondary and tertiary transport hubs with the TEN-T transport network. These measures will be overseen by the Slovenian Roads Agency, which is a body within the Ministry of Infrastructure which manages the main and regional roads as well as state bicycle routes. The Slovenian Roads Agency implements professional, technical, developmental, organisational and administrative tasks for the construction, maintenance and protection of main and regional roads and some expressways relating to transportation in cargo and passenger road transport.

The Slovenian Roads Agency is a beneficiary of ERDF funds for state road restoration and construction projects. The quota of available ERDF funds is considerably lower than in the current period; sections that have a direct impact on the economic development of regions in the Republic of Slovenia are only eligible for co-financing. A significantly lower number of measures is planned for implementation with ERDF funds. A special office and its employees within the scope of the technical aid for 2007–2013 prepare and implement projects co-financed from the current financial perspective, which has proven appropriate and a good basis for efficient work also within the scope of the 2014–2020 Cohesion Policy. Activities in relation to the implementation of projects co-financed by EU funds in the 2014–2020 period will be performed by employees who have performed work in the current perspective;

therefore, no major deviations are expected from the aspect of administrative qualifications regarding this field.

The Motorway Company of the Republic of Slovenia, in accordance with the Act on the Motorway Company of the Republic of Slovenia (Official Gazette of the Republic of Slovenia, No. 97/10 and 40/12–ZUJF) manages and maintains the motorway and expressway network in the Republic of Slovenia, and is the beneficiary of cohesion funds.

The amendment to the Act on the Motorway Company of the Republic of Slovenia from 2010 modified the scope of tasks which the company implements in its own name and on its own account. The Motorway Company of the Republic of Slovenia (DARS) executes the tasks of construction, management and maintenance of motorways, as well as material legal relations connected with motorways.

One motorway section construction project will be proposed for the drawing of cohesion funds in the 2014–2020 period, i.e. the route that has been constructed in the current financial perspective and provides a connection to a neighbouring Member State. Considering the amount of funds purposed for this area in the current perspective, the quota in the 2014–2020 period is significantly lower, mostly due to the motorway cross construction, which is almost completed, and the transfer of funds to new priorities i.e. railways and sustainable mobility.

In the current perspective, DARS successfully completed and opened 4 motorway sections; the final noise protection project is being implemented. The project which will be proposed for implementation in the next financial perspective is considered urgent and ready to go. The size of the project is comparable to the sections in the current perspective, so no major deviations can be expected regarding administrative capacity.

2.2.4. Maritime infrastructure

In the field of maritime infrastructure, the main measures will focus on the development of the port of Koper, which is one of the most important strategic platforms and has a favourable geostrategic position for supplying the markets of Central and Eastern Europe. A measure for the continuing development of the port is planned for implementation with the use of 2014–2020 EU funds.

The Infrastructure Directorate of the Ministry of Infrastructure, Maritime Sector, will act as the intermediate body where the project implementation's monitoring tasks will be executed. The project custodians at the Ministry of Infrastructure in the 2014–2020 period will be employees who have worked on the same tasks in the current perspective; therefore, no major deviations are expected from the aspect of administrative qualifications regarding this field.

The beneficiary of available Cohesion funds is the Slovenian Maritime Administration (SMA). The Slovenian Maritime Administration as a body within the Ministry of Infrastructure performs administrative and professional tasks in the fields of maritime and port infrastructure, supervision of the situation in ports, other areas of the territorial waters and internal maritime waters, navigation safety, the conduct of maritime traffic and maintenance of navigation and waterway safety facilities, inspection of the implementation of regulations in the field of maritime traffic and port infrastructure, inspection of the implementation of regulations on navigation on inland waterways.

The measure implemented by the SMA in the 2014–2020 period is similar to the measure which the SMA is implementing in the current perspective, so no major deviations can be expected regarding administrative qualifications in this field. The project to deepen navigation

channels to the Port of Koper will be prepared, managed and supervised by the available and qualified human resources of the SMA.

2.2.5. Horizontal tasks of 2014–2020 Cohesion Policy

2.2.5.1. Preparation and implementation of public procurement procedures

The preparation and implementation of public procurement procedures in the current financial perspective presented one of the major risks for the implementation of projects in accordance with schedules, since due to numerous auditing claims in the public procurement procedures and consequently delayed selection of contractors, delays in project realisation occurred. In 2010, a special department for managing the preparation and implementation of public procurement procedures was established at the Ministry of Infrastructure, mostly due to the need to accelerate the implementation of EU projects. Therefore, knowledge of public procurement procedures was transferred and concentrated from the individual services of the ministry, which has proven a successful model in the implementation of major infrastructural projects. The preparation of tender documentation and procedure management within the scope of individual directorates proved inefficient due to the lack of knowledge and experience (in many cases, individuals handled procedures in the entire perspective only for their projects); therefore the need to concentrate knowledge and experience in one place was very significant in accelerating and improving the quality of operations in this field.

When the beneficiaries of EU funds are the bodies of the Ministry of Infrastructure, the Public Procurement Office prepares and manages the entire public procurement procedure; when the Ministry of Infrastructure is an intermediate body and when the procedures for contractor selection are managed by beneficiaries outside the Ministry of Infrastructure, the Office cooperates on supervising the execution of public procurement procedures, thus improving the quality of preparation of tender documentation and thereby minimising the risk of errors as well as reducing the time for procedures.

Considering the fact that the timely acquisition of contractors in public procurement procedures in the current perspective is one of the main risks tor the implementation of projects in the period of eligibility for drawing EU funds and positive effects of reorganising work at the Ministry of Infrastructure in this field, in the field of implementing public contracts the Ministry maintain its organisation also to implement the 2014–2020 Cohesion Policy measures, and no major deviations can be expected concerning administrative qualifications in this field.

The Ministry of Infrastructure - in cooperation with the managing authority, the Ministry of Finance, which adopts the Strategy for the qualification and training of public servants in the field of public procurement and the Ministry of the Interior, which deals with the strategic development of education in the field of public procurement - will ensure that its employees who deal with 2014–2020 Cohesion Policy procedures will have regular and systematic training and education in the field of public procurement.

The key areas which will be included in public procurement training programme are:

- Review of changes in public procurement legislation;
- Use of individual types of public procurement procedure and transparent management of these procedures, including practical cases;
- Efficient application of EU rules on public procurements through suitable mechanisms;
- Legal protection in public procurement procedures, the practice of the National Review Commission and the EU Court in the field of public procurement;

- Green public procurement;
- Electronic public procurement;
- Preparation of high-quality contracts for works and goods contracted under the rules on public procurement.

2.2.5.2. Preparation of underlying bases in accordance with EU environmental legislation

Within the scope of the current financial perspective, the field of fulfilling the requirements of EU environmental legislation has also proven problematic. Most of the problems in the preparation and approval of projects related to the incomplete incorporation of EU legislation into Slovenian law. By amending the Environment Protection Act (ZVO–1F) in 2013, EU legislation on assessing the impacts on the environment was fully incorporated into Slovenian law; therefore, we expect fewer open questions and dilemmas in this field in the future.

By closely cooperating with the line ministry, which has most professional experience in this part, we acquired much know-how under the current financial perspective; this know-how will have to be upgraded and supplemented with appropriate training throughout the entire state administration, also within the scope of implementing 2014–2020 Cohesion Policy.

2.2.5.3. HR training system and supervision of project implementation

A special department is active at the Ministry of Infrastructure which performs tasks related exclusively to coordinating procedures for the use of European funds. The department will continue working in the 2014–2020 period in the same scope.

The key tasks of the department are connected to implementing Cohesion Policy procedures in accordance with the appropriate EU and Slovenian legislation, as well as instructions provided by the managing authority. The production and maintenance of the operational manuals needed to implement EU project management, financing and supervision, cooperation on planning finances for EU projects, monitoring the realisation of EU projects, coordinating procedures and projects for acquiring and using EU aid and the implementation of administrative cost control tasks prior to the payment of EU funds are among the main tasks of the department.

Department will also prošpse and coordinate appropriate trainings for all human resources involved in implementing the 2014–2020 Cohesion Policy at the Ministry of Infrastructure. This will additionally strengthen the administrative qualifications of HR in those fields where most needs arise. The managing authority organised all training for intermediate bodies under the current financial perspective, and this will remain the same in the future. Besides trainings organised by the managing authority, the staff of the Ministry of Infrastructure will also attend training organised by other distinguished and proven educational institutions, where the emphasis will be on seminars led by representatives of the European Commission, the managing authority or other lecturers on the implementation of European Cohesion Policy procedures.

Along with the important task of coordinating procedures, one of the main tasks of the department is monitoring and identifying potential deviations in the implementation of measures from the anticipated time plan. This is especially relevant within the scope of the Ministry of Infrastructure, which is competent for several important fields of state functioning and for maintaining permanent supervision of the achievement of objective and also timely recognition of potential deviations and timely measure facilitation. For this purpose,

employees cooperate on supervising the financial (controller) and physical execution of projects (project custodian), and on the basis of established potential deviations from time plans, they prepare proposals to accelerate the implementation of the project or propose to supplement slower projects with projects that are implemented without disturbances and on schedule.

3. TRANSPORT MODEL

3.1. INTRODUCTION

Transport evaluation is carried out with the national transport model, consisting of the CETRA and PRIMOS models[2]. The Slovenian national transport model is a tool for a relatively objective evaluation of the effects of future transport strategies at the national level. The results of forecasts based on this model are the basis for transport, environmental and economic evaluations of versions.

In addition (to the transport model), the legislative and political frameworks (domestic and EU) will have to be taken into account in the final proposals for solutions which should fulfil the purpose and attain the objectives of this Strategy.

3.2. DATA FOR THE DEVELOPMENT AND VALIDATION OF THE TRANSPORT MODEL

3.2.1. Introduction

The quality of the transport model greatly depends on the quality of input data. Therefore, the most reliable and credible data possible were used.

Two types of data were used:

- data for developing the model:
  - behavioural data for developing the demand model for passenger transport;
  - production and consumption, import and export of assets, and the logistics system for the demand for freight transport;
  - land use and socio-economic quantities for demand modelling;
- data for calibrating and validating the model:
  - data for the motorisation model;
  - data for the passenger transport model;
  - data for the freight transport model.

The data for developing the model are an essential basis for developing the model, while data for calibration and validation are intended for fine tuning the model, and confirming its credibility.

[2] Both models were developed between 2004 and 2013by the company PNZ within public procurements of the Ministry of Transport, the Ministry of Infrastructure and the Slovene Roads Agency.

3.2.2. Data for model development

3.2.2.1. Behavioural data for the development of the passenger transport model

Data for modelling generation factors, mode choice, distribution, occupancy of vehicles:

- Revealed preference survey in households, survey of travel habits of Ljubljana Region residents, PNZ, Ninamedia, URBI, 2003
- Revealed preference survey in households in the Republic of Slovenia; Slovene Roads Agency, 1999–2000
- DATELINE – Design and Application of a Travel Survey for European Long–distance Trips Based on an International Network of Expertise; Trias Consulting S.A. & Partners, 2003
- Mobilität in Deutschland, Bundesministerium für Verkehr; Bau in Stadtentwicklung, 2008
- Eurostat, EU, si.

Data for determining sensitivity to change (probability and utility functions):

- Research of additional elements for mode choice via a stated preference survey; University of Ljubljana, Traffic Technical Institute, 2009
- Stated preference survey in trains and at petrol stations in Slovenia, PNZ; University of Ljubljana, Traffic Technical Institute, 2012
- Value of time for road users, stated preference survey; University of Ljubljana, Traffic Technical Institute, 2007

Data for external transport modelling:

- Survey at road border crossing points; Slovene Roads Agency, PNZ, 2003
- Tracking registration plates at road border crossing points and control points; Slovene Roads Agency, PNZ, 2006

3.2.2.2. Basis for the development of the freight transport model

The development of the freight transport model is based on the following origins:

- Production and consumption by commodities in Slovenia; Statistical Office of the Republic of Slovenia (SORS), 2012
- Export and import by commodities in Slovenia; SORS, 2012
- Export and import among European countries by commodities in Slovenia; SORS, 2012

The data of the Statistical Office of the Republic of Slovenia are the basis for establishing production, consumption, and exports and imports at the national level. These value were broken down by traffic zones and are the basis for calculating generation factors.

3.2.2.3. Socio-economic data

The following data were used to develop the model of the **current situation**:

1. Data on residents (to develop production and attraction):
   - Central Population Register; Ministry of the Interior (MNZ), 2012
   - Number and structure of the population; Eurostat and statistical offices in neighbouring countries
   - Shares of employees, primary school children, secondary school students and university students; SORS, 2012

- Number of employees and their structure; Eurostat

The data are reliable and regularly published at the municipality level.

2. Data on jobs (to develop production and attraction):
   - Jobs by sectors and addresses, Agency of the Republic of Slovenia for Public Legal Records and Related Services (AJPES), 2012
   - Survey on employees in organisations; Slovene Roads Agency, 2012
   - Jobs in European countries, Eurostat.EU; statistical offices in neighbouring countries

Based on the survey in organisations with over 100 employees, the precise locations of jobs were determined in Slovenia.

3. Data on sales areas, enrolments and technical capacities (to develop production and attraction):
   - Sales capacities in retail stores, 2001; SORS
   - Survey on the sales floor areas and employees; Slovene Roads Agency, 2008
   - Sales capacities, Eurostat.EU
   - Enrolments at primary and secondary schools, and universities; Ministry of Education, Science, Culture and Sport (MZIKS), 2012
   - Accommodation capacities, arrivals and overnight stays of tourists; SORS, 2012
   - Accommodation capacities at the European level; Eurostat.EU

The following data were used to develop the model of the **future situation**:

- Forecast of gross domestic product growth rate; Institute of Macroeconomic Analysis and Development of the Republic of Slovenia (IMAD), 2009
- 2012 EU Reference Scenario modelling; Draft transport activity projections, EC, 2012
- Forecast of the number of population and their age structure by regions, NUTS 2; Eurostat, 2011
- Database of development areas in Slovenian regions; Urban Planning Institute of the Republic of Slovenia, 2009
- Database of Slovenian business zones; Public Agency of the Republic of Slovenia for Entrepreneurship and Foreign Investments (JAPTI), 2010

Most data are available at the level of countries, and NUTS 2 and NUTS 3 regions. In Slovenia, the data from basic GIS base of e-houses for residents are available by houses. The division into smaller spatial units is carried out in accordance with the data available and the logic of space.

In Slovenia, the distribution of jobs based on the data from AJPES is suitably corrected on the basis of a survey so that jobs are distributed in accordance with the actual situation. The floor areas of sales areas were also suitably corrected so that they approximately fit the actual situation.

The forecast of gross domestic product growth rate required for forecasting motorisation, mobility and the value of time is based on the 2009 IMAD forecast and the latest forecast of the European Commission for 28 EU Member States.

3.2.3. Data for the calibration and validation of the model

3.2.3.1. Data for the motorisation model

The calibration and validation of the Slovenian motorisation model are made on the basis of the following data:

- Motorisation rate by municipalities; MNZ (Ministry of the Interior), 2011
- Updating data of the transport model for the Ljubljana Region; University of Ljubljana, Traffic Technical Institute, 2003

The validity of the model is confirmed on the basis of a comparison of the model and statistical value of the motorisation rate in Slovenian municipalities.

3.2.3.2. Data for the transport model

1. Statistical and other data:
   - Statistical data on the population, schoolchildren and jobs; MNZ, SORS, AJPES, 2011
   - Number and structure of the population and jobs in European countries; Eurostat.EU and statistical offices by European countries
   - Active working population by municipalities, residence and municipality of post, 2011; SORS
   - Number of employees and their structure by countries; Eurostat.EU
   - Mobilität in Deutschland, Bundesministerium für Verkehr; Bau in Stadtentwicklung, 2008
   - Part of data from a revealed preference survey in households, survey of travel habits of Ljubljana Region residents; PNZ, Ninamedia, URBI, 2003
   - WebTAG 3.10.4 Variable Demand Modelling–Convergence Realism and Sensitivity, 2010

2. Count data:
   - Count data collected by automatic counters and manual counting; Slovene Roads Agency, 2011
   - Auswertung und Darstellung der Ergebnisse der automatischen Straβenverkerhrzälung; BMVIT, 2011
   - Verkehr und Zahlen; BMVIT, HERRY, 2011
   - Le Future TENT–T: Strumento di Crescita e Rilancio dell' Economia Europea; AISCAT, 2011
   - Trafico e Sicurezza; AISCAT, 2012
   - 2010. Evre vonatkozo keresztmetsczeti forgalma; Magyar Közut, 2011
   - Brojanje prometa na cestama; Hrvatske ceste, 2011
   - Counting passengers on trains owned by the Slovenian Railway Company, 2011
   - Freight transport on trains owned by the Slovenian Railway Company, 2011
   - Verkehrsprognose Ősterreich 2025+ Endbericht; Trafico & Partners, 2009
   - Sistema Informativo per il Monitoraggio e la Planificazione del Transporti; SIMPT 2, TPS & PTV, 2008
   - Counting passengers on interurban and peri-urban bus lines; PNZ, 2012

In Slovenia, data from 648 counting locations on state roads which facilitate detailed analyses (past and current flows by type of road and vehicle, peak hours) are available.

The Slovenian Railway Company counts passengers for one week in March. Data are available at sections and stations in the form of passengers per day.

Data on bus passengers are available in areas around larger towns and at selected cross-sections.

3.3. DESIGN OF THE ENTIRE MODEL

3.3.1. Basic characteristics

The transport model is comprised of the internal and external transport models, and models of impacts on the environment and traffic safety. All models are combined into a whole and are strategic.

The internal transport model is developed for the Central European area extending from the Atlantic Ocean to the Black Sea, and from the Baltic to the Mediterranean. The internal transport model consists of two sub-models: the national sub-model of the Republic of Slovenia based on the previously developed PRIMOS model, and the sub-model of the remaining area of the internal model. The national sub-model is more detailed and includes all intrazonal and interzonal trips, and intrazonal and interzonal transport, while the model of the remaining area of the internal model includes only interzonal trips and interstate transport. This transport model, which encompasses the wider discussed area, is called CETRA (CEntral European TRAnsport model).

External transport, i.e. transport originating from and/or going to outside the area of the internal model is summarised from the second generation TRANS-TOOLS pan-European transport model. This model comprises transport from the area of Europe which is not included in the internal model and the rest of the world.

The sub-model of impacts on the environmental and traffic safety was developed only for Slovenia.

Passenger and freight transport are modelled.

On the one hand, internal transport depends on conditions in Slovenian regional centres in connection with their gravitation hinterland, intraregional and interregional relations, and specific Slovenian characteristics, and on the other hand, on globalisation processes which also affect Slovenia. As a small country in terms of area, Slovenia depends on its environment even more than other countries. Therefore, the internal transport model encompasses the territory of Slovenia as well as its direct area of influence.

External transport depends primarily on globalisation processes and European characteristics included in the external model.

The internal and external transport models are strategic, and include interdependence between settlements, socio-economic and traffic conditions, and elements of the transport system. They both facilitate credible modelling of changes in mode choice for both passenger and freight transport. In accordance with European and Slovenian transport policies, public passenger and rail freight transport will assume a major role in the future.

Transport models for internal and external passenger and freight transport comprise four steps. These include traditional steps: production and attraction, distribution, mode choice, and assignment. This means that the growth factor method and frequently related subjective assessments are completely excluded. The model is entirely based on objective bases and

clear positions. Thus, in principle, the result of the model does not depend on the subject working with the model.

As is commonly known, the first three steps represent demand, and the last step represents assignment. Demand is modelled separately for passenger and freight transport, while assignment is common to both of them.

In accordance with the project task, transport is modelled on an average working day and during the afternoon peak hour. 2011 is the base year, while 2020 and 2030 are the forecast years. The model for the base year is calibrated and validated according to international criteria, and developed using the software tool VISUM 13.

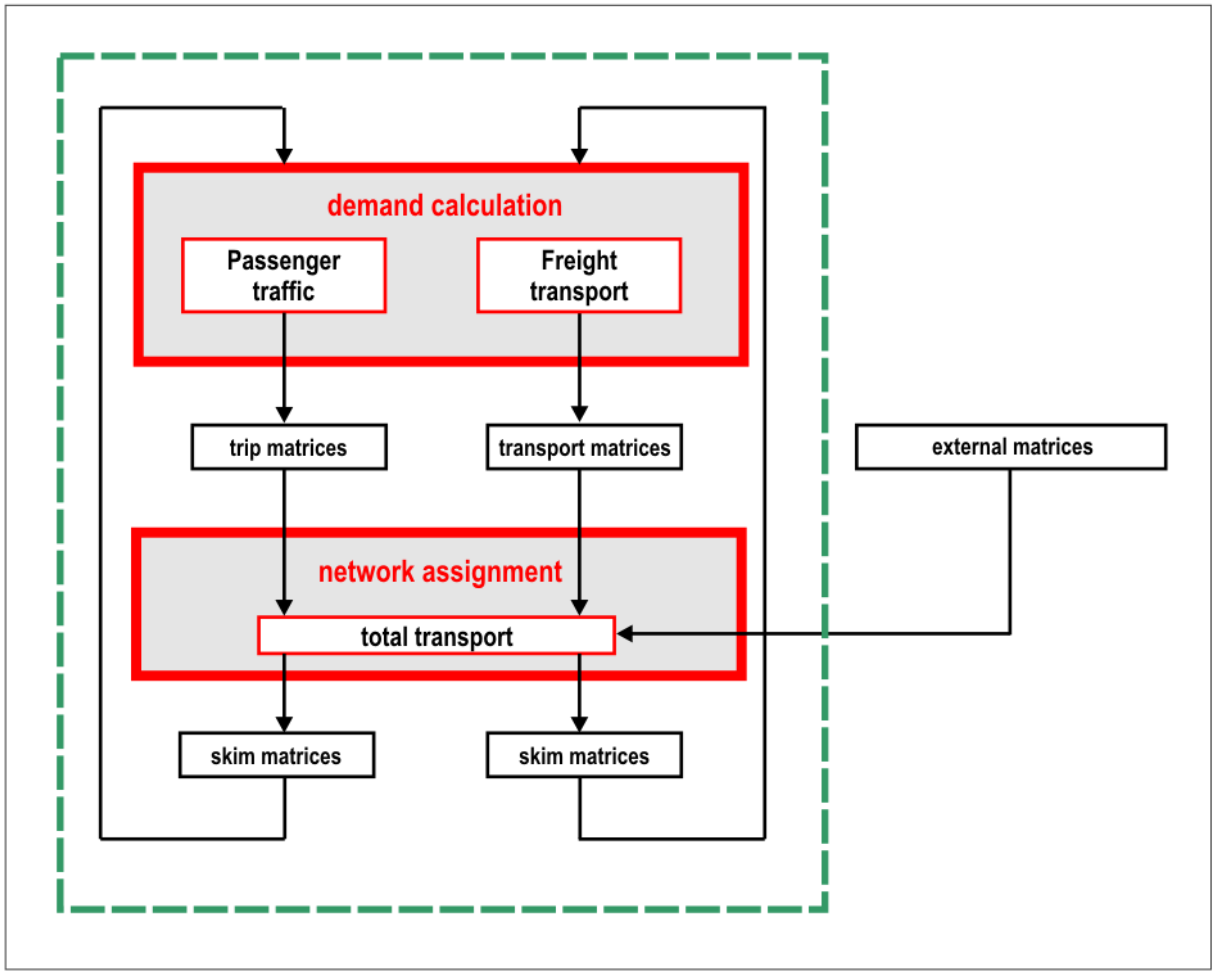


Figure 32 Design of the entire Central European transport model which includes passenger and freight transport

3.3.2. Structure of the model

The internal and external models comprise all relevant transport modes and infrastructure network, i.e.:

1. the internal passenger transport model
   - Slovenia:
     - private vehicles (including public car parks in larger towns),
     - public passenger transport (trains, line and non-line buses),
     - park and ride (private vehicles, trains, line buses),
     - airports,
     - bus and railway stations and stops (as an integral part of the infrastructure network for efficiently implementing public passenger transport),
     - transfer points,
     - bicycles, and
     - walking.
   - the rest of Central Europe:
     - private vehicles,
     - public passenger transport (trains, line buses),
     - airports and airline routes,
     - ferries,
     - bus and railway stations and stops,
     - transfer points.

2. the internal freight transport model
   - Slovenia:
     - trains,
     - light goods vehicles (up to 7.5 t), heavy goods vehicles (over 7.5 t),
     - transhipment points (including the port of Koper);
   - the rest of Central Europe:
     - trains,
     - heavy goods vehicles (over 7.5 t),
     - ships and ferries,
     - ports,
     - transhipment points.

3. the external passenger transport model
   - the rest of Europe and the world:
     - private vehicles,
     - public passenger transport (trains),
     - airports and airline routes,
     - ships and ferries,
     - railway stations and stops,
     - transfer points.

4. the external freight transport model
   - the rest of Europe and the world:
     - trains,
     - heavy goods vehicles (over 7.5 t),
     - ships and ferries,
     - ports,
     - transhipment points.

Based on the demand for passenger and freight transport in the internal transport model, which includes the production and attraction of trips and transport, their distribution and mode choice, and the demand for external transport, common passenger and freight flows are determined, which are arranged according to transport modes and their combinations.

3.3.3. Modelling area

Traffic conditions in Slovenia form the core of the discussed national transport model. However, external factors also affect traffic conditions in the country. Therefore, the area discussed does not merely comprise the territory of Slovenia, but a wider area, which is particularly important for modelling freight transport.

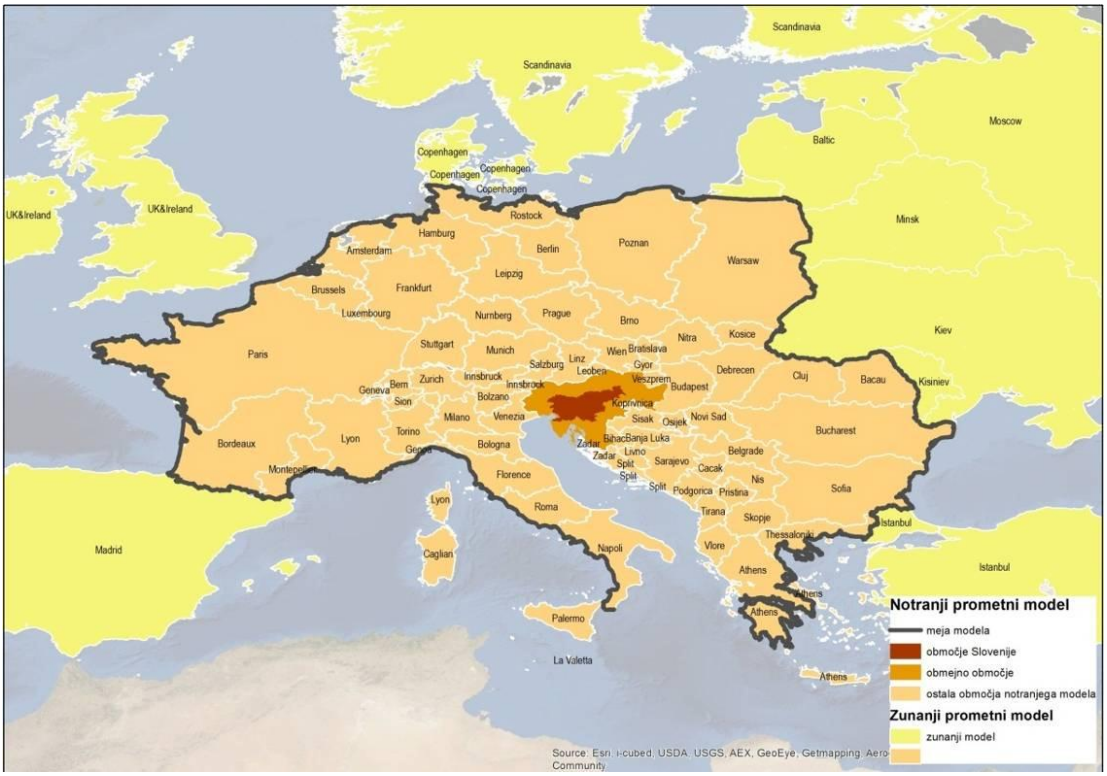


Figure 33 Internal zoning: 827 zones (bordered with a thicker line); external zoning: 12 zones (coloured in yellow)

As mentioned above, the internal transport model or the CETRA model encompasses the area extending from the Atlantic Ocean to the Black Sea, and from the Baltic to the Mediterranean. There are over 350 million people and around 150 million jobs in this area. Considering the fact that we are mainly interested in the conditions in Slovenia, this area is similarly dealt with at the national level. As part of the national model, traffic outside Slovenia is dealt with only to the extent to which it influences conditions in Slovenia. Figure 33 shows the internal model area, i.e. the area modelled within this study (bordered with a thicker line).

The model is similarly calibrated and validated with respect to traffic conditions in Slovenia. Traffic conditions outside Slovenia are verified approximately; they are more precisely verified for the border area and less precisely the farther they are from Slovenia.

3.4. DEMAND FOR INTERNAL PASSENGER TRANSPORT

3.4.1. Slovenia

3.4.1.1. Demand model

Production for an average working day is calculated according to the method of homogenous origin-destination groups. 13 characteristic origin-destination groups or purposes are included for an average working day: home–work, home–school (primary, secondary, university), home–shop, home–leisure, home–other, work–home, school–home, shop–home, leisure–home, other–home, work–other, other–work and other–other.

The generation factors used are derived from surveys of Slovenian households.[3]

In addition to the generation factors, socio-economic data by zones also constitute the basis for calculating generations, i.e.: number of residents, employees, schoolchildren, secondary school students and university students, and whether or not they own a passenger car.

Work- and school-related trips have hard boundary conditions (limited twice), while other purposes have soft boundary conditions (limited once). This means that the attraction of the latter depends on the benefits of the transport position and accessibility.

In the first step, **attraction** is determined in relation to all jobs, jobs in the tertiary sector, enrolments, floor areas of sales areas and residents.

The change in trip generation basically depends on growth in mobility (all trips/person/day) and the motorisation rate. Growth in mobility depends on GDP growth and is calculated with the equation:

Mi = η * BDPi

Mi … mobility growth factor in area i
BDPi…gross domestic product growth factor in area i
η …
Elasticity factor
The elasticity factor is calculated according to the method of medium arc elasticity which is most frequently used for transport analyses.

The equation is as follows:

η
= (difference of the Q quantity in %) ÷ (difference of the P price in %)

Medium (or linear) arc elasticity:

$$\eta = \frac{Q_2 - Q_1}{(Q_1 + Q_2)/2} \div \frac{P_2 - P_1}{(P_1 + P_2)/2} = \frac{(Q_2 - Q_1)(P_1 + P_2)}{(P_2 - P_1)(Q_1 + Q_2)}$$

[3] Revealed preference survey in households, survey of travel habits of Ljubljana Region residents, PNZ, Ninamedia, URBI, 2003

where:

η elasticity value,
Q_1 demand before,
Q_2 demand after,
P_1 price or services before,
P_2 price or services after.

A special model was developed to calculate the motorisation rate.

Changes in the socio-economic characteristics of individual traffic zones also affect production and attraction.

Distribution and mode choice are determined with the EVA simultaneous model. These are probability impedance functions which differ for various origin-destination groups, various transport modes and various types of impedance. These functions (in addition to attractions) determine which destination will be selected with a certain transport modes at the same time.

Probability impedance functions usually include travel time. Special functions are added to this model, i.e. the function sensitive to the availability of car parks and the function sensitive to the frequency of trips of public passenger transport vehicles. Thus a transport modes is selected more credibly, since it takes into account all of the most influential factors.

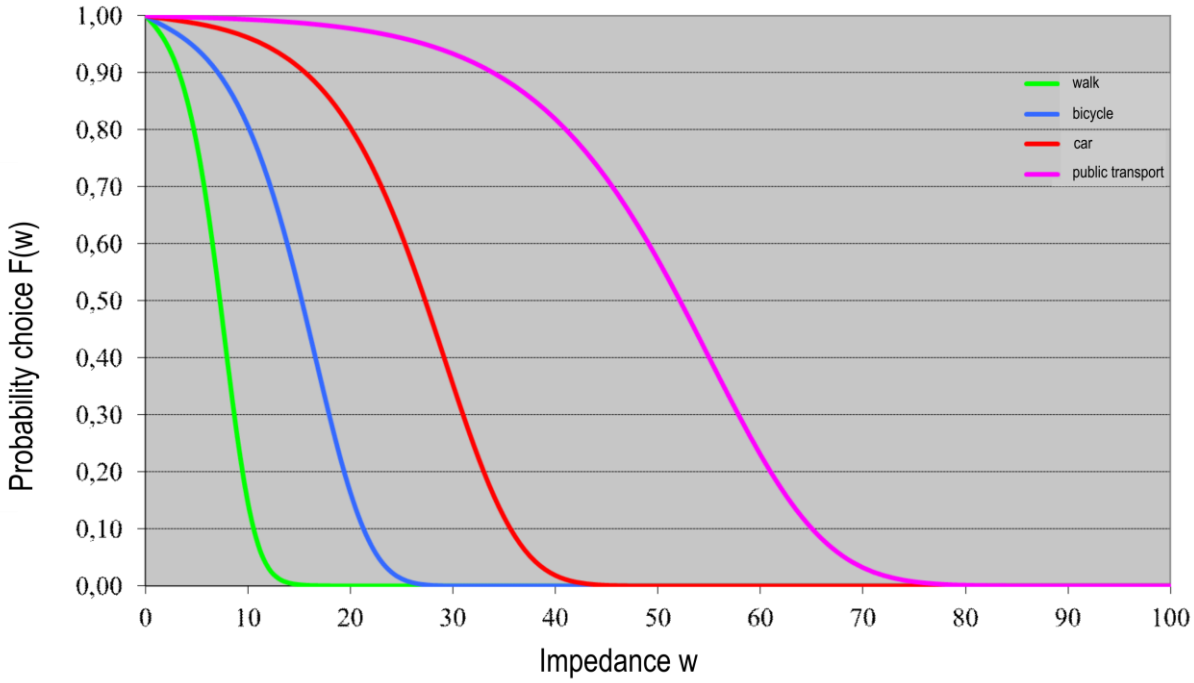


Figure 34 Probability impedance functions for various transport modes

Travel time represents a **generalised cost** or **generalised time**. A key element which affects mode choice and destination are the costs. The latter are expressed in a monetary (as generalised cost) or time (as generalised time) unit. In both cases, they consist of monetary and non-monetary costs. For the conversion of monetary or time costs into either money or time, it is necessary to know the value of time in view of the purpose of a trip. The value of time is different for various passenger categories. People for whom time is important are willing to pay more to arrive sooner, while people for whom time is less important are more sensitive to ticket prices or parking fees. With a rise in the standard of living, time becomes increasingly important while price sensitivity declines.

In the CETRA and PRIMOS models, the values of time applicable to the situation in Slovenia are used for Slovenia. Generalised time used in this model represents the attractiveness of a transport modes and a route, and includes all of the important impedance elements, i.e.:

- private vehicles:
  - monetary costs: fuel and vehicle maintenance costs, tolls,
  - travel time: travelling to and from a car park (walking time), travel time spent in the vehicle, stop at a border;
- public passenger transport:
  - monetary costs: price of ticket,
  - travel time: travelling to and from a station or a stop (walking time), waiting time at a station or a stop, time spent on embarking, time spent on transferring and travel time spent in the vehicle, stop at a border,
  - level of discomfort due to crowding in public transport vehicles.

The generalised time used is comprised of all the aforementioned elements. Time is not determined mathematically, but in a way in which people perceive and feel it (*perceived time*) e.g. waiting time is perceived less comfortably than the same amount of travel time.

As mentioned above, the availability of car parks and the cost of parking are specially modelled with a special function as elements of the impedance function.

As shown in the sub-chapter 'Structure of the model', a special mode of transport in Slovenia is the park and ride system (P+R), which is also specially modelled.

Impedance function sensitive to the availability of general car parks

The availability of car parks, which also includes the cost of parking, is taken into account. The number of available parking spaces and the average cost of parking by traffic zones are also taken into account.

The average cost of parking by traffic zones is calculated on the basis of a survey of all the parking spaces available in five largest Slovenian towns. In the transport model, car parks are divided into three basic groups:

- public non-payable,
- public payable (parking platform, multi-storey car park, street parking, P+R car parks),
- private vehicle parks (business and reserved for residents).

The value of the variable 'average cost of parking' comprises two components. **The availability of a car park** (number of parking spaces) and the actual **cost of parking** according to the type of car park and duration of parking are taken into account.

Work- and university-related parking takes into account the actual costs of eight-hour parking at payable car parks, and the number of parking spaces at non-payable and private vehicle parks. Other purposes take into account the actual cost of one-hour parking, the number of parking spaces at payable car parks, and the number of parking spaces on other public surfaces. A weighted average equation is used.

Impedance function sensitive to the frequency of public transport services

In addition to the function sensitive to the availability of car parks, a special function sensitive to the frequency of public transport services is also included. Thus the quality of the public transport offer, in addition to travel time, includes the frequency of service. It matters whether three trains are available per day or per hour.

The parameters of the EVA 2 function, which is the mathematical basis for the calculation, are determined on the basis of a stated preference survey.

Parameters differ according to the purpose of a trip. Parameters for the whole of Slovenia are determined for two basic purposes:

- purpose 1 – trips to work and school
- purpose 2 – trips for other purposes (shopping, leisure, other).

In general, potential users of public transport who travel for other purposes are more sensitive to the frequency of service than people travelling to work or school. In both cases, the attractiveness of public transport is greatly reduced if the interval between trains is over two hours. Thus the probability of using public transport is less than ten per cent. The impedance function used here applies to interurban and peri-urban transport.

Through the two additional functions, all essential elements of the offer of private vehicles and public transport are included in the model. Thus the model became a tool suitable for testing various transport policies.

Modelling the P+R system

The purpose of the P+R system in is to shorten the duration of trips by passenger vehicle, reduce the number of cars in city centres, and optimise transport costs, thereby enhancing the development of public passenger transport. This is a combination of travel whereby part of the trip is performed by car and part by public transport. The order is not important, but the use of both transport modes is implicit.

An additional probability impedance function is included in modelling the P+R system. In the first step, the impedance matrix for the P+R system is determined with the convolution matrix procedure[4]. The impedance matrix is determined on the basis of two impedance matrices, i.e. of passenger cars and public transport. Based on the locations of all car parks in the P+R system, the most favourable location for transfer between two transport modes is determined for an individual origin-destination pair, which is followed by a simultaneous process of distribution and mode choice (EVA model) which results in trip matrices by purpose and transport modes. The trip matrix of the P+R system is divided on the basis of the matrix of the most favourable location and added to a trip matrix separately carried out by passenger car and by public passenger transport.

3.4.1.2. Motorisation model

Based on numerous statistical surveys and surveys at home and abroad, it was established that the motorisation rate directly affects residents' mobility and mode choice. Therefore, a motorisation model that facilitates credible forecasts of the motorisation rate is very important for determining future mobility and mode choice. Higher motorisation rates result in more trips per capita, particularly for non-working purposes, as well as in the increased use of passenger vehicles and reduced use of public transport.

A detailed analysis established that the so-called logit model or *Ordered Logit Model* corresponds at the national level.

An organised logit motorisation model was developed:

- for households and
- for persons.

[4] Matrix convolution is the procedure where minimum matrix between car and public transport matrix is calculated with help of transfer point matrix

The variables and sub-variables are derived from a survey of households in 2003 for the wider Ljubljana Region.[5] One variable is, for example, age, while sub-variables are various age groups. A national survey in households between 1999 and 2001 was also analysed.[6]

At household level, four potential probabilities are addressed:

- a household without a car;
- a household with one car;
- a household with two cars;
- a household with three or more cars.

For persons, two possibilities are addressed:

- a person has a car and
- a person does not have a car.

The significance of independent variables is representatively determined at the level of the wider Ljubljana region, i.e. separately for the area of the Municipality of Ljubljana and for other areas in the region. Statistical reliability is determined with a linear hypothesis test. Thus, the determined independent variables are components of the motorisation model of Slovenia.

3.4.2. Remaining Central European area

3.4.2.1. Demand model

A unified demand model has been developed for the entire area included in the internal transport model. This model is more detailed only for Slovenia, while it is more approximate for the other 22 countries, since we are interested in transport from outside Slovenia which may affect traffic conditions in Slovenia.

Production is also calculated according to the method of origin-destination groups. However, we are interested merely in interzonal transport, not in intrazonal. Generation factors by countries are determined on the basis of international and domestic surveys in households. The share of interzonal transport is determined on the basis of international surveys.

The change in trip generation is determined on the basis of the growth in mobility and gross domestic product, and motorisation rate. The expected GDP growth and the motorisation rate is summarised from the latest international origins by countries (without Slovenia).

Distribution and mode choice are determined with the EVA simultaneous model. Special functions of EVA which differ from Slovenian functions have been developed for this area, which especially includes long-distance traffic.

Probability impedance functions include travel time, i.e. generalised time, which encompasses non-monetary and monetary costs, which is similar to the Slovenian model. However, it does not encompass additional functions sensitive to the availability of car parks and the frequency of public transport services. The P+R system is also not included in this area.

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[5] Source (1)

[6] Survey in households in the Republic of Slovenia, Slovene Roads Agency, 1999/2000

As aforementioned, a model has been developed for the area of the remaining 22 countries, which realistically affects only traffic conditions in Slovenia. Within this model, we are only interested in this area.

The CETRA and PRIMOS transport models constitute the Slovenian national model, which encompasses more detailed impacts of the immediate environment. This has a significant impact on the precision and reliability of freight flows.

This model will definitely provide the discussed area with significantly more credible, exact and reliable results than the current TRANS-TOOLS pan-European model, which considerably deviates from the actual conditions in Central Europe.

3.4.2.2. Motorisation model

The growth in the motorisation rate for 22 countries will be summarised from the latest international forecasts based on the latest forecasts of gross domestic product and other factors. In the demand model, the motorisation rate will be taken into account in a similar model as in the Slovenian model and will also affect mobility and mode choice.

3.5. DEMAND FOR INTERNAL FREIGHT TRANSPORT

Commodity model

a. Commodities

The commodity model is multi-layered and heterogeneous.

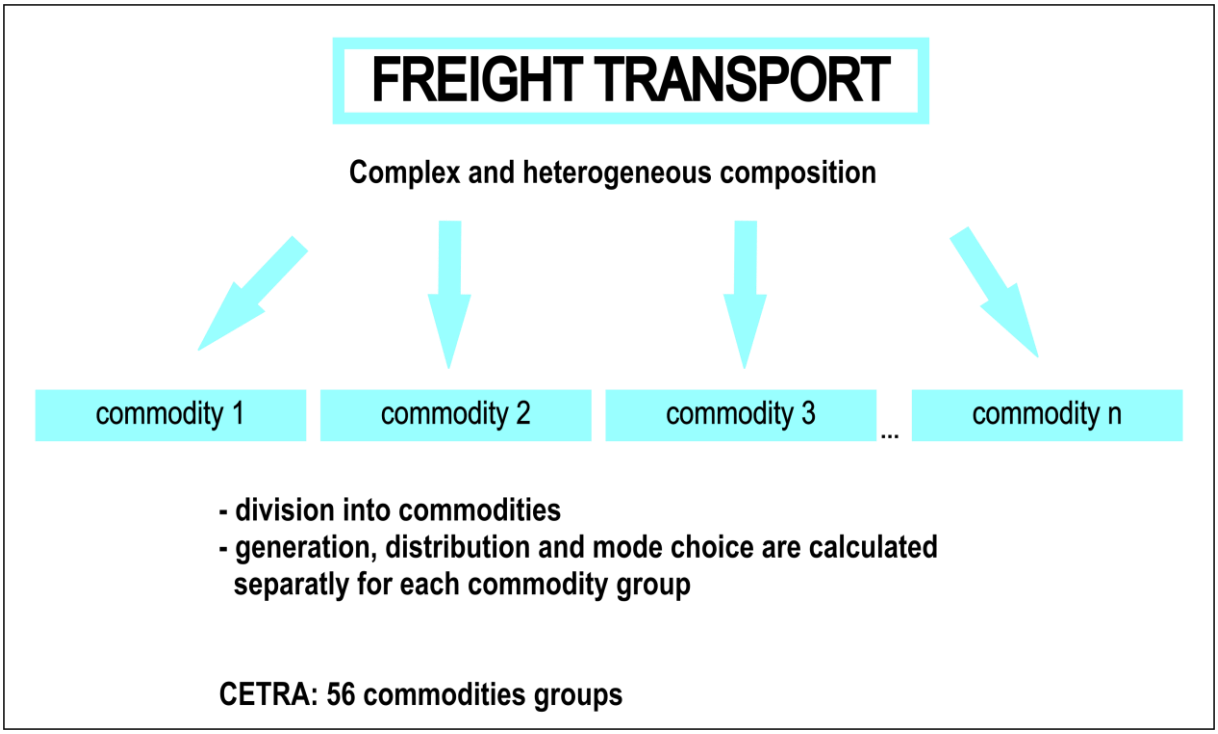

Figure 35 The commodity model is divided into commodities which are specially modelled

The essence of this model is that it is divided into commodities, and that generation, distribution and mode choice are calculated separately for each category. The CETRA model includes 56 commodities, each commodity being treated separately in the demand step, since each commodity is characterised by its own features which differ from others.
The more commodities there are, the more accurate and close to reality the model is. Major differences between commodities appear particularly in the distribution phase.

All 56 commodities are included in nine economic categories. The list of commodities includes all goods relevant to Slovenian freight transport and transport among other European countries which may affect traffic conditions in Slovenia.

b. Logistics systems

Logistics systems are categories with similar requirements regarding the commodity model, which is shown in the use of similar transport modes and similar handling costs.

Logistics systems are usually divided into:

- bulk goods,
- containers,
- goods in bags,
- liquids,
- perishable goods,
- etc.

Mode and route choice largely depends on transport costs. Commodities with similar features in terms of physical characteristics and the possibility of transport are attributed to certain logistics systems and types of costs. Various transport costs are determined for logistics systems, as shown in Table 5.

Table 5 Logistics systems

Logistics system	Explanation
Liquid: crude oil	Crude oil transport
Liquid: oil products	Transport of oil products (e.g. oil)
Liquid: food	Transport of liquid foodstuffs
Bulk goods: raw material	Transport of dry, bulk material in large quantities (e.g. iron ore)
Bulk goods: building materials	Transport of bulk building materials (e.g. gravel)
Bulk goods: food and fodder	Transport of dry, bulk material and foodstuffs (e.g. cereals)
Goods in bags	Transport of goods in large and small bags
Containers	Transport of goods in containers (e.g. consumer goods)
Special goods vehicles	Transport of goods requiring special vehicles (e.g. machines)
Fresh food	Transport of perishable foodstuffs
Natural gas	Natural gas transport

c. Steps of the category model

The modelling procedure has five steps:

1. Generation of freight transport expressed in quantities per traffic zone (t/year).
2. Distribution of freight transport expressed as a flow between traffic zones (t/year).
3. Mode choice expressed as a flow between traffic zones by certain transport modes (t/year).
4. Conversion to vehicles expressed as transport between traffic zones by transport modes.
5. Assignment expressed as transport by traffic sections (including empty runs).

In the first three steps, transport is calculated per year, and in the last two steps, per working day or peak hour.

Individual steps are modelled consecutively, but reverse effects iteratively affect previous steps.

d. Generation

The first step of the demand calculation is a calculation of quantities of transport generated in each zone and each category. This is carried out for production and consumption. The basic assumption is that the sum of the quantity of transport generated at origin in a certain country is the same as the sum of transport generated at destination. Quantities at origin are composed of local production and imports of a certain quantity, while at destination, they are composed of local consumption and export.

Based on the type of commodity, and considering whether local production and consumption may be calculated, the decisive land use is represented by:

- population (rural/urban),
- production capacities,
- employees by sectors.

At the level of countries and the entire area of the internal model, local production and imports must equal local consumption and exports. Quantities at origin (production) and at destination of transport (attraction) are calculated for each of 56 commodities. If local consumption exceeds local production, import is required. If local consumption is lower than production, the surplus is exported. Of course, the actual conditions are also taken into account, since a certain amount may be exported even if consumption exceeds production, etc.

In the calculation of generation, the production procedure is taken into account, e.g. the excavation of limestone is followed by the production of slag, which is then followed by the production of cement, etc.

e. Distribution

Similar to generation, distribution is calculated separately for each category. Distribution is calculated with the gravitation model, which distributes transport quantities among origin and destination zones. The result is flow in tonnes per year in traffic zones.

Distribution is calculated in two steps:

1. calculation of skim matrices based on impedance between traffic zones;
2. calculation of matrices of commodity flows (expressed as flow in tonnes per year) based on evaluation matrices, and origin and destination quantities.

The cost matrix expressed in monetary terms is used as the impedance matrix. The matrix values expressed in EUR are calculated with the impedance function.

Thus the origin-destination matrix of commodity flows expressed in net tonnes per year is calculated for each commodity.

Synthetically, distribution is calculated only for transport in Slovenia. Future distribution for origin-destination and transit transport (in relation to Slovenia) is based on current distribution. Past experience with category models of long-distance flow distribution shows that synthetic models describe the actual situation poorly and achieve a very poor correlation in respect of the actual situation. Therefore, the synthetic model is not used to determine distribution for origin-destination and transit transport.

The existing distribution was acquired on the basis of Eurostat and SORS statistics, and data from north Adriatic ports. According to a special key that depends on all jobs and residents,

and especially on jobs in agriculture, construction and industry, these flows are divided by commodities into levels of traffic zones.

This means that potential future changes in the distribution of origin-destination and transit flows depend only on changes in generation, not on changes in the impedance matrix.

However, the changes in the impedance matrix will affect mode and route choice. Since Slovenia and other countries have established trade in goods with all of the other 22 countries, potential future changes will perhaps be adequately taken into account.

As noted above, transport quantity generated at origin and at destination of transport is expressed in tonnes per year. The same unit is used for distribution and the expression of category flow between traffic zones.

f. Mode choice

Similar to generation and distribution, mode choice is determined separately for each of the 56 commodities.

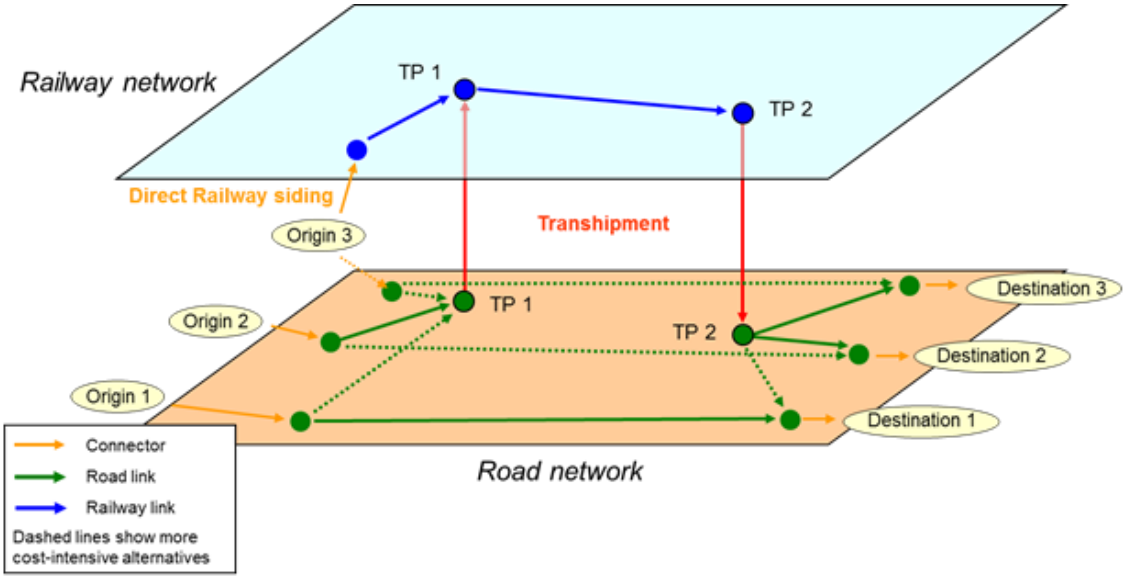

Figure 36 Mode choice or the combination of modes used is determined in the volume phase

Mode choice or a combination of modes is determined on the basis of multimodal network assignment with individual commodities. A route and a transport modes based on a generalised cost are selected at the same time.

Generalised cost and generalised time include monetary and non-monetary costs for road, rail and ship transport, and the logistics system. Therefore, it includes costs related to time, distance travelled and logistics tasks.

Costs in the model are determined as:

- time-related costs: costs in relation to the transport modes and the loss of the value of goods according to the category;
- distance-related costs: costs in relation to the transport modes;
- logistics costs: costs of loading/unloading and transhipment.

Transport costs are attributed to traffic sections on the network. The following is taken into account when using transport modes:

- link attributes: permitted use of a transport modes, transfer sections;
- logistics system, allocation of commodities.

For each category, the multimodal network is assigned according to an iterative balance procedure, with flow matrices expressed in tonnes. The result is the most cost-effective route and transport modes for each origin-destination pair.

Costs thus consist of costs that depend on the distance travelled, transport time and transhipment activities. The most favourable combination of transport modes is then selected.

g. Conversion to vehicles

Traffic flows of categoriescommodities expressed in tonnes per year are calculated in transport per day or hour, where the average load of individual types of vehicles, empty runs and the logistics system are taken into account.

The results of this procedure are trip matrices by means of transporttransport modes on a working day or at an applicable selected hour.

3.6. DEMAND FOR EXTERNAL TRANSPORT

The forecast of external transport is based on the forecast of a four-step model, i.e. on the TRANS-TOOLS pan European model which, in Slovenia, is partially adjusted to Slovenia's specific conditions. The ArcGIS, Traffic Analyst 2.0 tool has been used.

At the final step, the matrices of internal and external transport are combined into unified matrices by transport modes and units of assignment.

Such matrices of external and internal transport constitute the basis for network assignment in a base year. The pivot point method was used for forecasting, which takes into account changes in individual origin-destination pairs of external transport.

Combining the internal and external model

The demand model of external passenger and freight transport is designed with the use of the ArcGIS, Traffic Analyst 2.0 tool. The final assignment of the network is designed with the use of the VISUM tool. Thus networks may be assigned with combined matrices of internal and external transport.

3.7. ASSIGNMENT

Road transport assignment is determined with a multimodal model according to the learning process stochastic method. Personal motorized and freight transport are also assigned. The BPR function volume-delay, which differs between various road categories, is taken into account. Bicycle and pedestrian traffic are assigned with the same model, while public passenger transport is assigned with an intermodal model according to the timetable method. Freight transport is also assigned with an intermodal model which includes all the relevant transport modes and transhipment points.

Assignment is carried out according to the static method, which corresponds to the level of the national model.

The assignment model also includes road and public transport capacity limitations based on which saturation and congestion on the road network, and crowding in public transport vehicles are determined. This affects the demand for zones, mode choice and distribution of traffic on the road and public transport network.

In the stochastic assignment procedure, the most favourable route is usually selected, but the fact that individuals are incompletely and differently informed of traffic conditions and the costs of competitive routes is also taken into account, which is closer to reality. Thus traffic is distributed on the network more realistically.

Road toll collection is included in generalised travel time. The price of tolls by type of vehicle is converted into generalised time taking into account the value of time according to purpose of trip.

Road toll collection also affects mode and route choice.

As noted above, **the impact of parking policy** is integrated in the demand model through a special function, and affects mode and destination choice.

At the same time, rail, ship and ferry freight transport are also assigned on the basis of the generalised cost. The result of freight transport assignment is similar to that of passenger transport, and is expressed as the number of light and heavy goods vehicles, the number of trains with a certain structure and the number of ships of a certain type. All are expressed in terms of vehicles per working day by traffic sections.

3.8. ENVIRONMENTAL IMPACTS AND TRAFFIC SAFETY

Sub-models for the calculation of air pollution, noise emissions and road accidents have also been developed within the transport model.

Air pollution for road transport is calculated on the basis of the HBEFA emission factors, which are prepared for European conditions by the Swiss company Infras. Various factors are used for various types of vehicle - i.e. separately for diesel and petrol engines - for various EURO emission standards. Fuel consumption is also calculated.

Also calculated are emissions of gas which affects global climate change: CO_2, CH_4, N_2O, and emissions which affects local conditions: NO_x, SO_2, $PM_{2,5}$, several components of HC and others.

The calculation of gas emissions is a module included in the VISUM tool; therefore, the calculation of emissions may be carried out directly with this tool.

Noise imissions for roads and railway are calculated on the basis of traffic assignment on a working day for indicator L_{den} (day, evening, night), which includes motorways, expressways, state roads and railway.

An analytical model for forecasting **road accidents** has been developed for road transport. Sub-models and their parameters which facilitate the calculation of future accidents have been developed for individual regions in the country for various road categories on the basis

of data on past accidents, traffic assignments and vehicle structure. The model for forecasting road accidents is integrated in the transport model.

3.9. BASES FOR TRANSPORTATION FORECASTING

3.9.1. Introduction

Transportation forecasting depends on transport drivers, which may be external, internal or policy factors.

External factors are: the number and age structure of the population, the motorisation rate, the settlement pattern, employment, gross domestic product growth, the number of jobs and their structure in the area, domestic and international trade, and domestic and international tourism.

In addition, transportation forecasting is also influenced by the anticipated transhipment rate in the ports of Koper, Trieste and Rijeka, and the expected future number of passengers transported at the Ljubljana Jože Pučnik Airport.

3.9.2. Development of socio-economic conditions in Central Europe

Demand forecasting within the four- or five-step transport model is based primarily on future European socio-economic conditions.

Transportation forecasting for Central Europe and Slovenia has been prepared for 2020 and 2030.

Population growth within the EU-27 is derived from the official Eurostat forecast at the NUTS 2[7] level. In 2005, the European Union had 491 million residents. In 2020, there will be 496 million residents and approximately the same by 2030 (495 million). Thus the number of residents in the European union will be approximately the same by 2030.

Within the EU-15, low growth in the number of residents (from 387 million to 399 million) is expected, while within the EU-12, a decline is expected (from 104 million in 2005 to 96 million in 2030). The highest population growth is expected in Ireland, Luxembourg and Cyprus, while the greatest decline is expected in Estonia, Latvia, Lithuania and Bulgaria. Outside the EU, population growth forecasts derive from United Nations[8] forecasts In this area, the highest population growth is expected in Turkey, while population will decline most significantly in Russia, Belarus and Ukraine. Europe's' population is ageing and the age group of over 64s is becoming the dominant group. Therefore, the share of the active working population is declining and shifting to the inactive population. Within the EU-27, the age group of over 64s will comprise almost half of the population by 2030; there will be 14 per cent fewer people younger than 18 than in 2005, and the group of active working population (18 to 64 years of age) will have declined by 7 per cent.

A lower active working population also means fewer employees - one of Europe's future problems.

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7 TREND–forecast 2004, Eurostat
8 Population prospects, 2006 revision, UN population division.

Figure 6-6 shows that population growth by 2030 is particularly expected in more developed countries. The active working population is expected to grow only in Cyprus, Ireland, Luxembourg, Malta and Sweden.

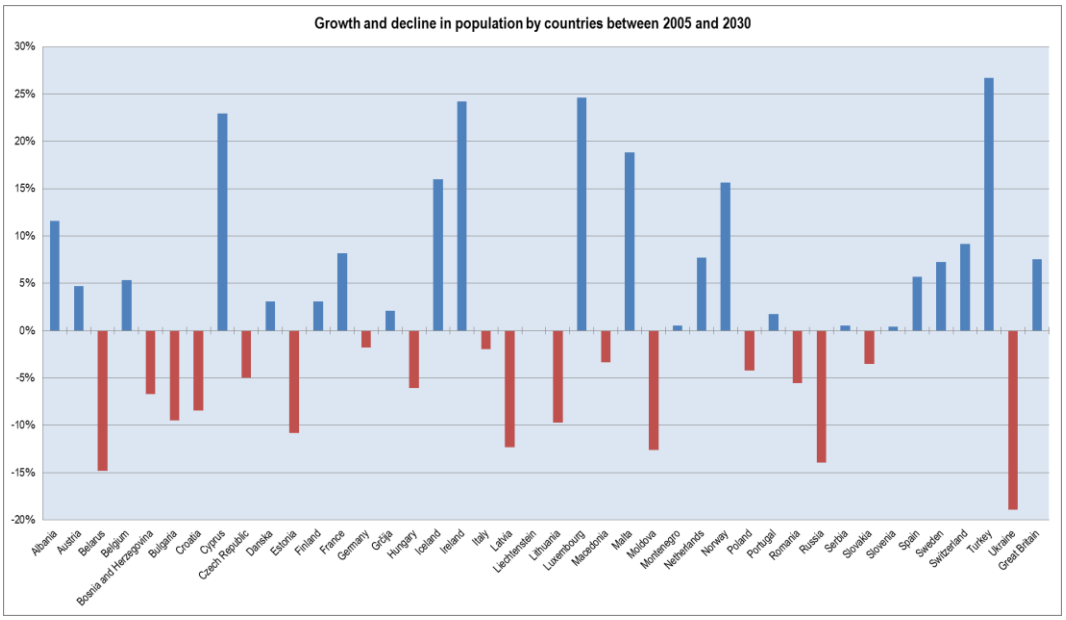


Figure 37 Population growth in Europe between 2005 and 2030

Economic development by 2030 is estimated on the basis of Report no. 253 prepared by the Directorate-General for Economics and Financial Affairs.[9] Economic development expressed in gross domestic product (GDP) per capita will be faster in Eastern Europe and slower in Western Europe. This development was also perceived in the past. Within the EU-15, GDP per capita amounted to approximately EUR 24,000 in 2005, and is expected to increase by 2030 to approximately EUR 37,000 (expressed in fixed prices). Within the EU-12, GDP per capita amounted to approximately EUR 5,000 in 2005, and is expected to increase by 2030 to EUR 13,000. The ratio in the value of GDP per capita between the two areas is expected to decline from 4.7 to 2.9.

[9] Long–term labour productivity and GDP projections for the EU 25 Member States, European Commission, Directorate–General for Economics and Financial Affairs, No. 253, 2006

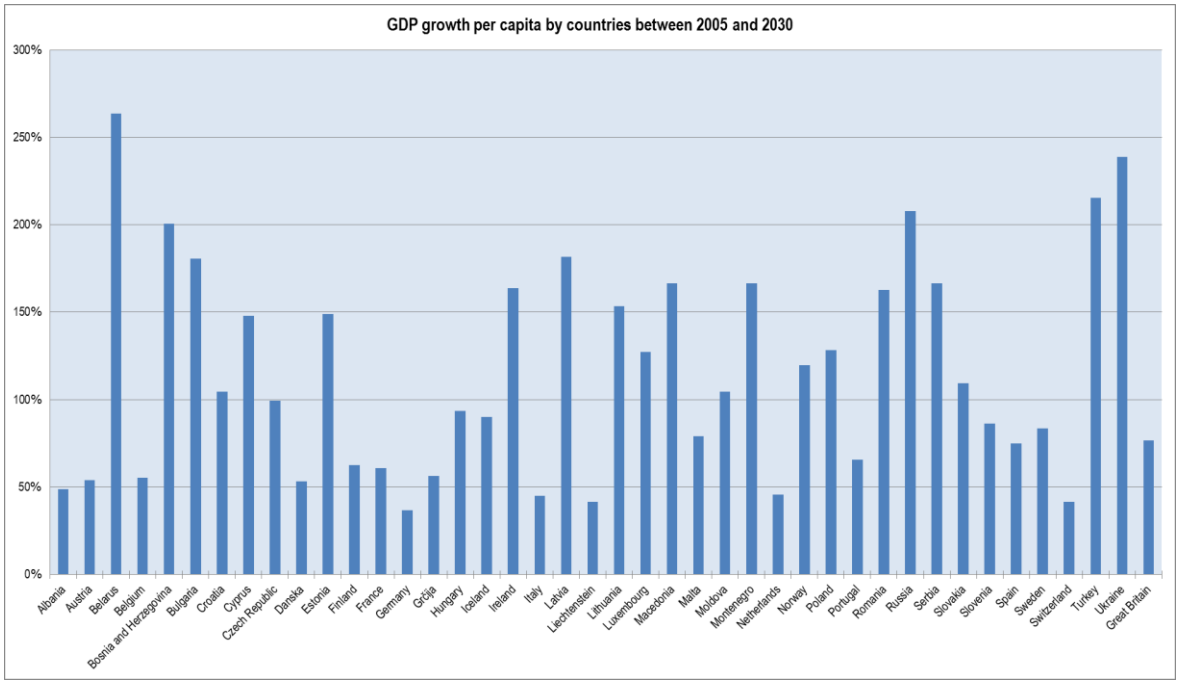


Figure 38 Gross domestic product growth per capita at fixed prices between 2005 and 2030

Regarding **tourist accommodation capacities**, only beds in hotels have been taken into account. In 2005, France (over 10 million beds) and Italy (over 7 million beds) had the greatest tourist accommodation capacities. Since no data were available on future tourist accommodation capacities, the future situation also took into account existing tourist accommodation capacities.

Tables 6 and 7 show the development of the basic socio-economic indicators for 42 European countries used in transportation forecasting.

Table 6 Socio-economic conditions at the European level, 2005

Country	Population	Jobs	Beds in hotels	GDP (in EUR million)	GDP (in EUR million) per capita	Motorisation
Albania	3,135,000	925,998	80,727	6,582	2,099	58
Austria	8,236,100	3,734,414	1,280,779	245,330	29,787	499
Belarus	9,800,300	4,379,997	252,363	24,265	2,476	181
Belgium	10,478,100	4,071,241	684,692	301,966	28,819	481
Bosnia and Herzegovina	3,842,600	1,149,996	98,946	8,655	2,252	117
Bulgaria	7,739,600	2,800,457	241,335	21,883	2,827	330
Croatia	4,443,500	1,582,989	794,809	31,260	7,035	312
Cyprus	757,800	315,320	99,520	13,659	18,025	472
Czech Republic	10,235,800	4,762,860	634,266	100,320	9,801	385
Denmark	5,419,300	2,740,510	711,596	207,756	38,336	369
Estonia	1,346,200	581,180	50,948	11,209	8,327	319
Finland	5,246,300	2,406,429	923,757	157,162	29,957	436
France	62,444,000	23,885,124	10,100,328	1,688,712	27,044	453
Germany	82,468,300	35,715,046	5,228,689	2,244,522	27,217	537
Greece	11,104,000	3,948,892	873,170	198,609	17,886	380
Hungary	10,087,100	3,845,899	259,740	88,914	8,815	289
Iceland	296,700	155,000	16,639	13,084	44,097	563
Ireland	4,159,200	1,749,839	265,601	161,498	38,829	368
Italy	58,607,300	21,756,762	7,450,847	1,423,048	24,281	568

Country	Population	Jobs	Beds in hotels	GDP (in EUR million)	GDP (in EUR million) per capita	Motorisation
Latvia	2,300,600	996,486	47,389	13,012	5,656	245
Liechtenstein	34,800	17,000	1,189	2,941	84,511	688
Lithuania	3,414,100	1,420,820	42,568	20,673	6,055	387
Luxembourg	457,300	188,230	118,571	30,032	65,673	656
Macedonia	2,035,200	544,999	52,406	4,676	2,298	124
Malta	403,500	196,000	38,016	4,756	11,787	636
Moldova	3,600,400	1,050,000	92,713	2,399	666	81
Montenegro	623,000	196,378	16,042	1,815	2,913	191
Netherlands	16,319,800	8,176,416	2,187,253	508,964	31,187	401
Norway	4,623,200	2,293,198	830,826	242,935	52,547	413
Poland	38,165,100	13,550,976	982,757	244,420	6,404	337
Portugal	10,549,400	5,132,719	718,744	149,010	14,125	298
Romania	21,634,300	9,767,548	349,868	79,587	3,679	168
Russia	143,474,200	67,133,985	3,694,562	614,410	4,282	177
Serbia	9,497,200	2,498,617	249,925	23,093	2,432	156
Slovakia	5,386,900	2,111,110	253,544	38,480	7,143	236
Slovenia	**2,000,400**	**922,379**	**51,507**	**28,252**	**14,123**	**479**
Spain	43,398,600	16,240,669	4,563,328	908,450	20,933	438
Sweden	9,029,500	4,347,850	766,580	294,674	32,635	436
Switzerland	7,437,300	3,959,170	945,510	299,472	40,266	485
Turkey	72,064,800	21,790,993	3,307,972	290,503	4,031	80
Ukraine	47,100,600	21,377,988	1,212,866	69,085	1,467	118
Great Britain	59,880,200	28,338,276	3,434,965	1,812,927	30,276	448
Sum, average	**803,277,600**	**332,759,760**	**54,007,853**	**12,632,999**	**15,727**	**329**

The motorisation rate will continue to grow, although at a slightly lower rate. Within the EU-15, the motorisation rate will grow from 483 private vehicles/1,000 residents in 2005 to 553 in 2020 and 594 in 2030. Within the EU-12, the motorisation rate will grow from 337 in 2005 to 402 in 2020 and 447 in 2030. The ownership of cars expressed in private vehicles/1,000 residents was estimated on the basis of a model in which car ownership also depended on gross domestic product growth. The motorisation model was developed within the scope of the TENconnect project.[10]

Table 7 Socio-economic conditions at the European level, 2030

Country	Population	Jobs	Beds in hotels	GDP (in EUR million)	GDP (in EUR million) per capita	Motorisation
Albania	3,497,719	1,033,136	80,727	9,787	2,798	61
Austria	8,622,222	3,910,118	1,280,779	377,521	43,785	616
Belarus	8,350,836	3,732,194	252,363	88,246	10,567	256
Belgium	11,040,516	4,287,085	684,692	469,287	42,506	595
Bosnia and Herzegovina	3,585,530	1,073,062	98,946	26,013	7,255	164
Bulgaria	7,006,899	2,554,162	241,335	61,376	8,759	467
Croatia	4,069,357	1,449,704	794,809	63,881	15,698	394
Cyprus	931,821	387,730	99,520	33,867	36,345	648
Czech Republic	9,730,457	4,530,863	634,266	200,028	20,557	495
Denmark	5,585,553	2,824,583	711,596	318,163	56,962	463
Estonia	1,200,394	518,233	50,948	27,897	23,240	452
Finland	5,407,418	2,489,172	923,757	255,299	47,213	555
France	67,564,652	25,843,802	10,100,328	2,716,665	40,208	555
Germany	80,998,908	35,173,141	5,228,689	3,069,207	37,892	647
Greece	11,337,298	4,035,268	873,170	310,148	27,356	455

[10] TENconnect: Traffic flow: Scenario, Traffic Forecat and Analysis of Traffic on TEN–T, DG TREN, 2009

Country	Population	Jobs	Beds in hotels	GDP (in EUR million)	GDP (in EUR million) per capita	Motorisation
Hungary	9,477,947	3,629,323	259,740	172,201	18,169	371
Iceland	344,132	179,779	16,639	24,855	72,225	867
Ireland	5,167,568	2,168,767	265,601	425,882	82,414	569
Italy	57,472,116	21,403,102	7,450,847	2,064,614	35,924	690
Latvia	2,017,265	873,761	47,389	36,628	18,157	358
Liechtenstein	34,800	17,000	1,189	4,163	119,638	804
Lithuania	3,082,160	1,282,678	42,568	52,391	16,998	545
Luxembourg	569,866	234,564	118,571	68,278	119,813	784
Macedonia	1,967,225	526,796	52,406	12,466	6,337	160
Malta	479,594	232,963	38,016	8,521	17,766	764
Moldova	3,146,390	917,595	92,713	4,901	1,558	88
Montenegro	626,302	197,419	16,042	4,839	7,726	231
Netherlands	17,577,197	8,805,577	2,187,253	742,116	42,220	479
Norway	5,347,723	2,652,576	830,826	533,928	99,842	630
Poland	36,552,060	12,938,184	982,757	558,003	15,266	451
Portugal	10,732,068	5,210,654	718,744	246,864	23,002	363
Romania	20,440,990	9,186,957	349,868	209,012	10,225	225
Russia	123,502,591	57,788,932	3,694,562	1,891,255	15,313	251
Serbia	9,547,536	2,511,858	249,925	61,563	6,448	189
Slovakia	5,196,638	2,032,922	253,544	80,569	15,504	297
Slovenia	**2,008,409**	**926,073**	**51,507**	**52,612**	**26,196**	**633**
Spain	45,880,260	17,136,943	4,563,328	1,587,796	34,607	545
Sweden	9,682,340	4,665,364	766,580	540,948	55,870	583
Switzerland	8,118,519	4,321,808	945,510	423,941	52,219	567
Turkey	91,320,513	27,613,547	3,307,972	915,835	10,029	102
Ukraine	38,203,297	17,339,687	1,212,866	233,946	6,124	160
Great Britain	64,388,673	30,471,905	3,434,965	3,199,974	49,698	586
Average	**801,813,759**	**329,108,987**	**54,007,853**	**22,185,486**	**27,669**	**421**

In this context, Slovenia was considered in the same manner as other countries which were included in the global forecast of European socio-economic conditions. The data on jobs for Slovenia deviate from the actual data for 2005; therefore, the forecast of jobs for 2030 is too high. Gross domestic product growth (for all countries) is also relatively high, as the crisis which slowed development in several countries has not been taken into account. Therefore, the forecast of the future motorisation rate for Slovenia is also too high.

The tables show that Europe will have approximately the same number of residents in 2030 as in 2005 (803,277,600 in 2005, 801,813,759 in 2030). The number of jobs is expected to slightly decline. gross domestic product per capita is expected to grow by 76 per cent and the motorisation rate by 28 per cent.

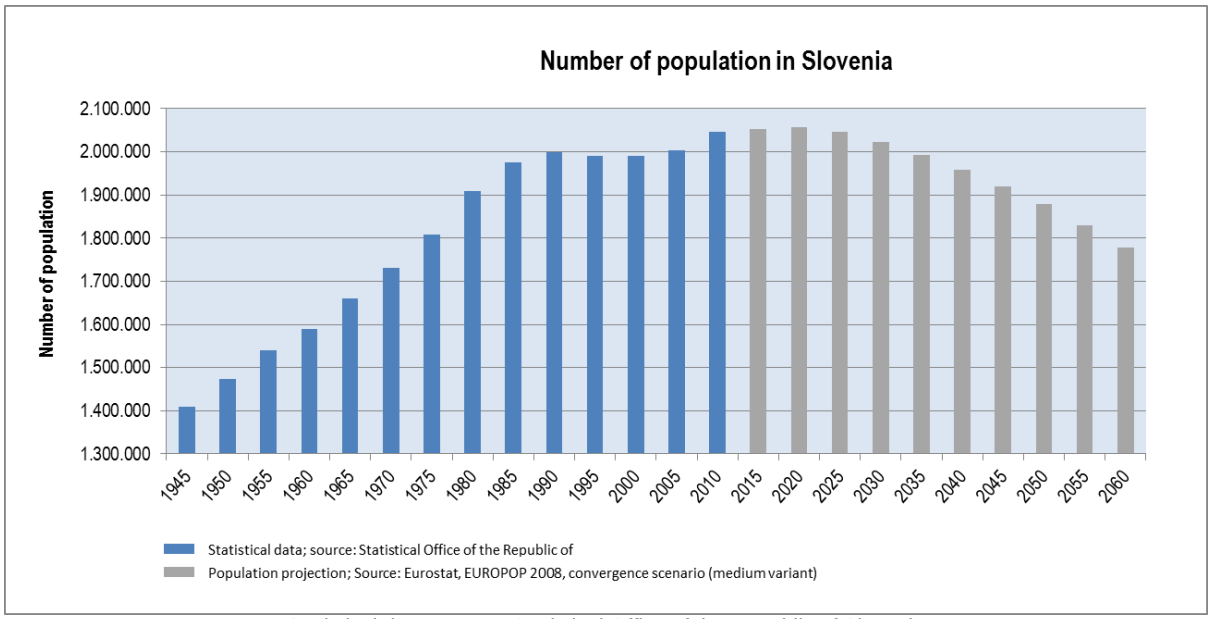
3.9.3. Forecast of socio-economic conditions in Slovenia

The assessment of future socio-economic conditions in Slovenia is largely based on the forecast growth in population and its age structure published by Eurostat (Europop 2008 – medium variant).[11] In addition to natural increase, this forecast includes migration. Domestic demographics experts of individual countries (e.g. Slovenia) also participated in the preparation of these forecasts.

In 2011, Slovenia had 2,052,496 residents (permanently and temporarily registered).

[11] Eurostat.EU

Eurostat's projection for 2020 and 2030 includes a forecast made separately for the cohesion regions of Eastern and Western Slovenia. In the global forecast, forecasts are shown for the whole of Slovenia, while forecasts by traffic zones are based on forecasts for these two regions.



Statistical data; source: Statistical Office of the Republic of Slovenia
Population projection; Source: Eurostat, EUROPOP 2008, convergence scenario (medium variant)

Figure 39 Number of residents in Slovenia by years

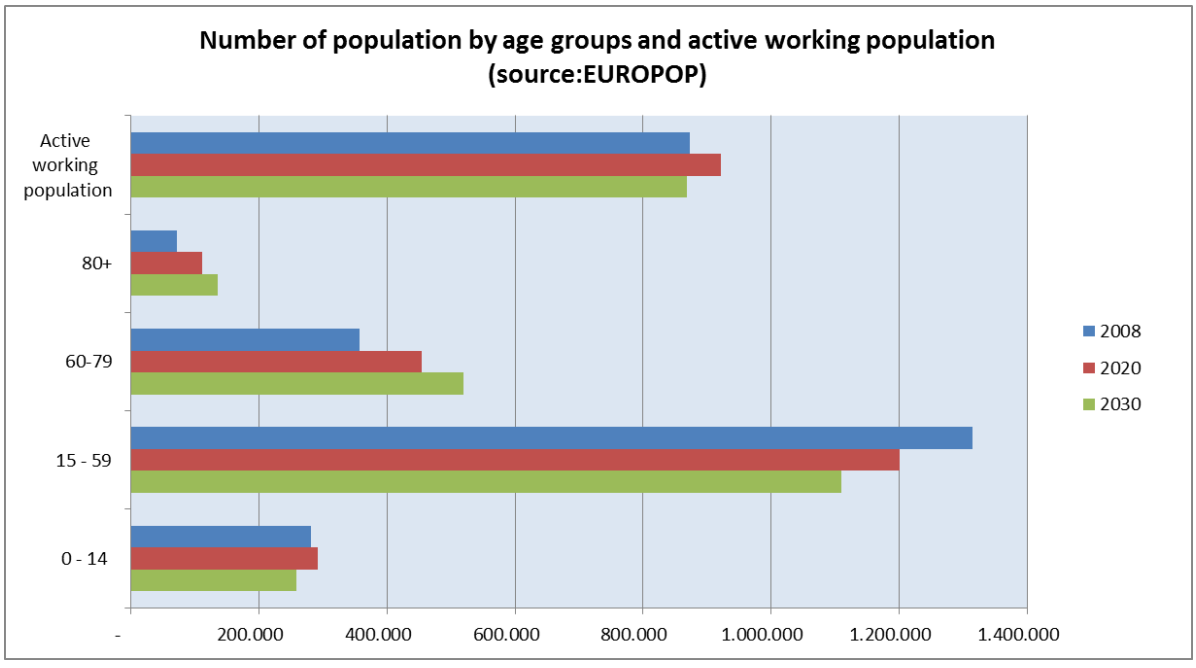


Figure 40 Age structure of residents of Slovenia by years

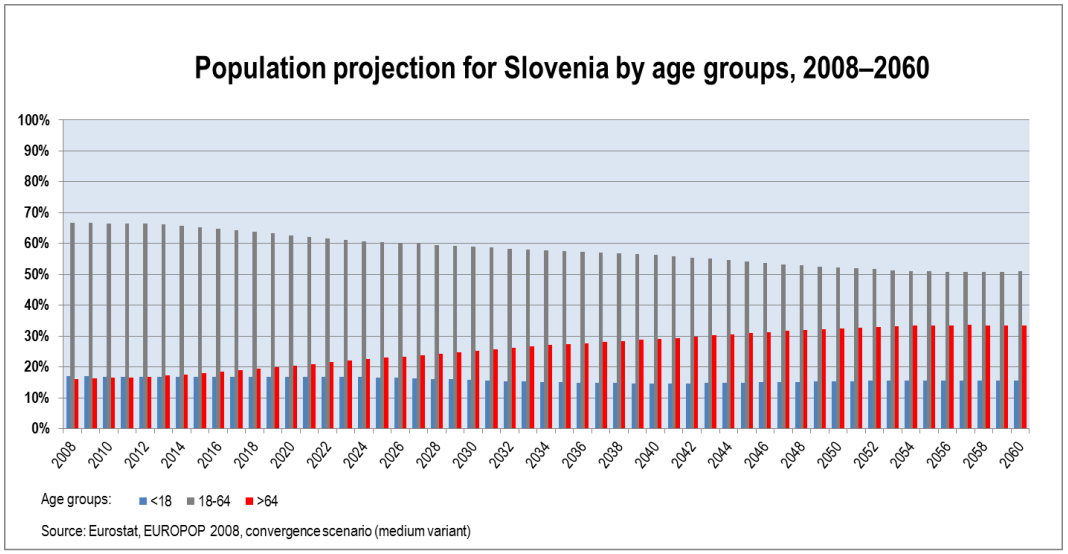
According to this forecast, 2,059,202 people will be living in Slovenia in 2020, which is almost the same as in 2011, and 2,022,751 in 2030, or 1.45 per cent less than now. The number of the population in this period will not change significantly, but the age structure will change

considerably, particularly of the active working population and the population older than 60. However, during a later period, e.g. by 2060, Slovenia will also experience a significant decline in population.

280,967 people were aged between six and nine in 2011 or 13.7 per cent. There will be around 25,000 more in 2020 (304,934), and around 10,000 less in 2030 (270,013) than in 2011, which means that there will be fewer primary school children and secondary school students in 2030 than now.

As mentioned above, active working population, i.e. aged between 20 and 59, will significantly decrease. This group comprised 1,216,309 people in 2011; in 2020, it will comprise 1,087,603, or 128,000 fewer than in 2011, while in 2030, it will only comprise 1,010,269 people or 206,000 fewer than in 2011. The age group between 20 and 59 will decrease by 10.5 per cent by 2020 and by 16.9 per cent by 2030. This means that this age group will also comprise fewer employed people, which will be a problem for Slovenia in the future.

431,503 people were older than 60 in 2011, which will increase by 135,000 to 566,008 in 2020, and by 223,000 to 654,213 in 2030. The share of people older than 60 was 21.1 per cent in 2011; this will increase to 27.5 per cent in 2020 and 32.3 per cent in 2030, which is almost a third of the population. Thus the share of older people is increasing.



Source: Eurostat, EUROPOP 2008, convergence scenario (medium variant)

Figure 41 Movement of active working population and employed persons in Slovenia

The graph in Figure 41 shows that the group of active working population (grey) will continue to decline up to 2050, while the group of over 64s (red) will grow. The share of people younger than 18 (blue) will also continue to decline up to 2050.

In the future, people will have to work longer; otherwise, labour force will be insufficient. This will also be imposed on them by pension reform. Therefore, the forecast regarding employed persons takes into account the fact that people will work five years longer on average than now.

In 2011, there were 824,162 employed persons in Slovenia. If we take into account that the share of employed persons in the active working population group aged between 18 and 64 remains the same as the share prior to the crisis and that people will work five years longer

in the future, there will be 921,707 employed persons in 2020 or 11.8 per cent more than in 2011, and 868,307 in 2030 or 5.4 per cent more than in 2011. Therefore, the extended years of service will result in slightly more employed persons in 2030 compared to 2011.

This means that there will be approximately the same number of jobs in Slovenia in the future as prior to the crisis, since the number of jobs depends heavily on the number of employed persons and vice versa. There were 878,957 jobs in Slovenia in 2008 and 824,553 in 2011. If we take into account that the ratio between employed persons and jobs remains the same, there will be 930,768 in Slovenia in 2020 or 5.9 per cent more, and 879,325 in 2030, which is almost the same as in 2008 and more than in 2011. Thus the change in the age structure of the population in the next twenty years will not result in fewer jobs due to longer years of service.

However, not all segments of employment will remain the same as in 2008 and 2011. Even until now, the number of jobs in the primary and secondary sectors has been declining, while the number in the tertiary and quaternary sectors has been rising. This trend will undoubtedly continue. Therefore, this process is taken into account in the assessment of the future increase in jobs by sectors, which also takes into account the future movement of all jobs, i.e. that the number of all jobs will decline after 2020.

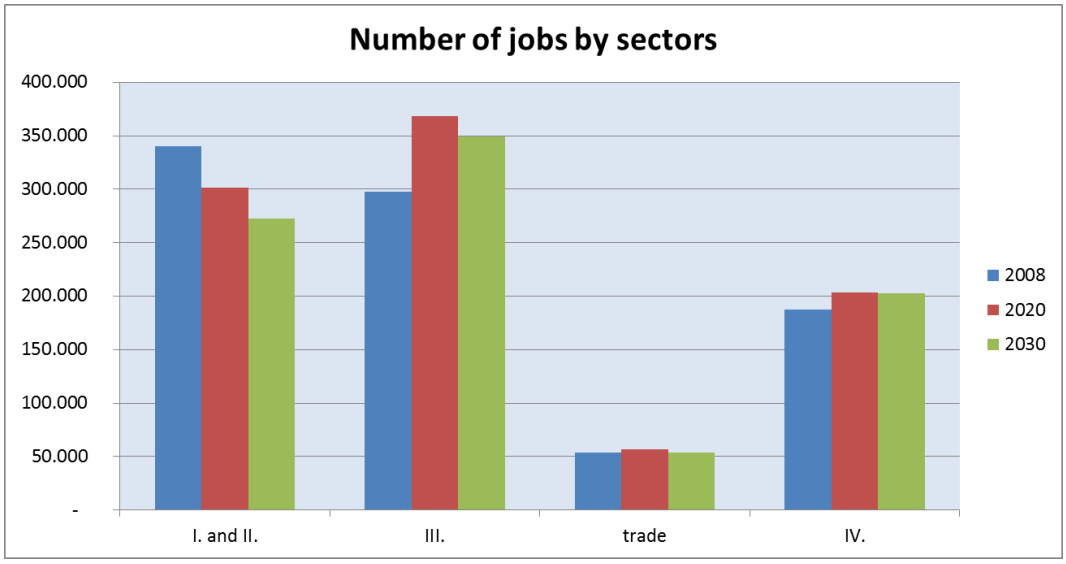


Figure 42 Number of jobs by sectors in Slovenia

After 2020, more rational employment and greater productivity will be required, as a smaller labour force will be available, also in the tertiary and quaternary sectors. In these two sectors, more persons will be employed in 2030 than in 2008, but fewer than in 2020.

It is estimated that the sales floor areas will minimally increase in the next twenty years. Saturation with retail outlets is already considerable, so greater shifts cannot be expected, except in terms of greater rationalisation.

The number of schoolchildren is determined by the age structure of the population by age groups. The number of enrolments will, naturally, follow demand. The number of primary school children and secondary school students will grow slightly by 2020 compared to 2011, but decline by 2030, so there will be fewer students than now. Considering the fact that particularly secondary school students are among the main users of public transport, there will be less demand for this mode in the long term.

In 2011, approximately 100,000 beds in commercial holiday facilities and approximately 50,000 in private holiday facilities were available in Slovenia. The number of beds in private holiday facilities is not expected to change considerably, while the number of beds in commercial holiday facilities is expected to grow. There are no projections regarding future capacities of tourist facilities in Slovenia. However, the analysis of development so far shows that the number of beds in commercial holiday facilities has grown in the last decade at a rate of two per cent annually. We assume that the number of beds will also grow slightly, i.e. by at least 1.5 per cent annually up to 2020 and one per cent annually after 2020. Based on this assumption, the number of beds in commercial holiday facilities will have grown by 19,000 by 2020 and by 31,000 by 2030. This means that approximately 128,000 beds in commercial holiday facilities and approximately 60,000 in private holiday facilities will be available in 2030, which is a total of 188,000.

Gross domestic product growth is summarised from the long-term projection by IMAD[12] and Eurostat, and corrected for the period between 2009 and 2011. Gross domestic product per capita in Slovenia was EUR 17,688 in 2008; it will be EUR 21,143 in 2020 and EUR 24,863 in 2030. Purchasing power parity is significantly higher.

The motorisation model is calculated with the motorisation model, which was developed for this project. The calculation is shown in Chapter 8. There were 523 private vehicles/1,000 residents in Slovenia in 2011, and there will be 568 private vehicles/1,000 residents by 2030. The motorisation rate will increase by an average of 14.3 per cent by 2030. By then, the motorisation rate in Slovenia will be approximately the same as in Italy, France and Spain currently, and significantly lower than in 2006 in Luxembourg (661) or now in the USA (828).

Table 8 shows basic socio-economic data at the national level.

Table 8 Socio-economic data for developing a prognostic transport model at the national level for 2011, 2020 and 2030

Indicator	Value by year		
	2011	2020	2030
Number of all registered residents	2,052,496	2,059,212	2,022,751
Number of employed (active working) residents	824,162	921,707	868,307
Share of active working residents	40.20%	44.76%	42.93%
Number of jobs in the primary sector	10,217	9,720	7,827
Number of jobs in the secondary sector	272,294	312,505	251,653
Number of jobs in the service sector	270,771	321,455	313,201
Number of jobs in commercial activities	50,561	56,973	53,869
Number of jobs in tourism activities	9,311	11,643	11,344
Number of jobs in recreational activities	17,250	22,480	21,903
Number of jobs in hospitality activities	14,038	15,387	17,235
Number of jobs in the quaternary sector	180,111	180,605	202,293
Number of all jobs	824,553	930,768	879,325
Sales floor areas (m^2)	1,957,560	2,005,371	2,025,425
Number of persons aged between 6 and 14	182,045	192,132	170,123
Share of persons aged between 6 and 14	8.90%	9.30%	8.40%
Number of enrolments in primary schools	177,062	185,538	164,284
Number of persons aged between 15 and 19	98,922	112,813	99,890
Share of persons aged between 15 and 19	4.80%	5.50%	4.90%
Number of enrolments in secondary schools	97,254	107,058	94,794
Number of regularly enrolled students	76,777	76,159	74,810
Share of regularly enrolled students	3.70%	3.70%	3.70%
Number of enrolments in tertiary education	80,548	89,705	88,116
Commercial and private tourist accommodation capacities (number of beds)	150,000	175,000	188,000

[12] Long-term projection of gross domestic product growth in Slovenia, IMAD, 2009

Indicator	Value by year		
Gross domestic product per capita expressed as purchasing power parity (EUR)	21,000 €	25,102 €	29,518 €
Motorisation rate (private vehicles/1,000 residents)	523	568	598

All indicators which affect transport demand are arranged by traffic zones. There are 687 traffic zones in Slovenia, 95 in neighbouring countries and 45 in other Central European countries.

The forecast by traffic zones is based on the demographic forecast for two cohesion regions: Eastern Slovenia and Western Slovenia.

This takes into account the fact that the settlement pattern in Slovenia is relatively stable and will not significantly change. At the level of the national model, a more detailed change in the land use is not taken into account, as it will generally take place within the traffic zones of this transport model.

In addition to the demographic forecast by Eurostat, the forecast of the socio-economic conditions in the two cohesion regions is also based on the analysis of the current development by statistical regions. The current development is also taken into account in the forecast for the two cohesion regions.

Therefore, the forecast of the socio-economic conditions shown here and used in the transport model is more or less a continuation of the current development orientation. It does not take into account scenarios of various political measures which could change the current development. If interest is shown, the impact of these scenarios will be studied in subsequent analyses of spatial and socio-economic variants.

3.9.4. GDP forecast [13]

The table of average annual growth rates for 2010–2060 is given below and includes influential countries, i.e.:

- Austria,
- Czech Republic,
- Germany,
- Hungary,
- Italy,
- Poland,
- Slovakia and
- Slovenia.

[13] The projection of average annual growth rates of GDP, productivity and employment 2010–2060 is summarised from the publication of the European Commission 'The 2012 Ageing Report, Economic and budgetary projections for the 27 EU Member States 2010–2060 (EC, European Economy, 2/2012). The forecast of average annual growth rates is given in five-year periods from 2010 to 2060.

Table 9 Projection of average annual GDP growth rates

	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
Austria	1.3	1.7	1.5	1.3	1.3	1.4	1.4	1.4	1.3	1.3	1.3
Czech Republic	2.1	2.1	1.8	1.7	1.7	1.6	1.5	1.3	1.1	1.1	1.2
Germany	1.2	1.2	1.0	0.7	0.5	0.6	0.8	0.9	0.8	0.7	0.8
Hungary	0.2	0.6	1.4	1.9	1.9	1.4	1.2	1.0	0.9	0.9	0.9
Italy	0.3	0.7	1.8	1.9	1.4	1.2	1.2	1.3	1.5	1.5	1.5
Poland	4.3	3.3	2.0	1.6	1.5	1.4	1.2	0.8	0.5	0.5	0.6
Slovakia	3.5	2.9	3.0	2.5	1.7	1.2	0.9	0.7	0.6	0.7	1.0
Slovenia	1.8	2.3	1.5	1.6	1.4	1.2	1.0	0.9	0.9	1.1	1.3

The table shows the forecast of a gradual reduction in economic growth in all hinterland countries by 2060, except in Italy and Hungary. The movement of average annual GDP growth rates is also shown in the diagram below.

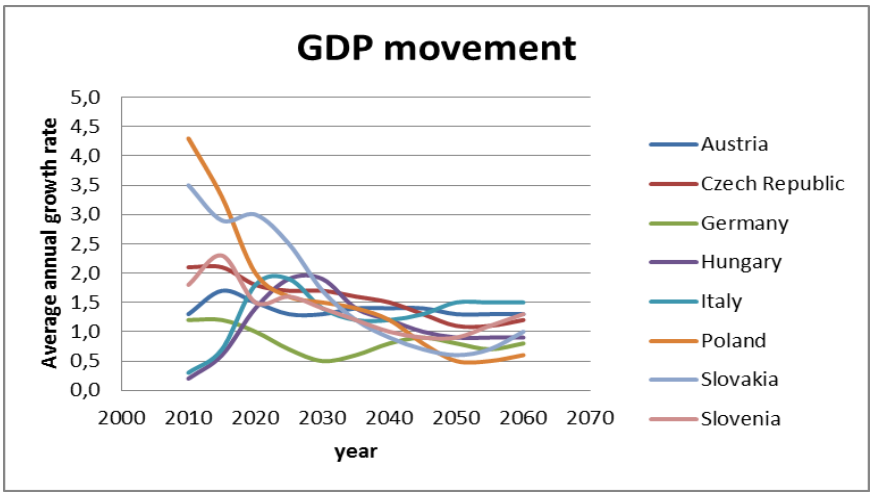


Figure 43 Projection of average annual GDP growth rates

Average weighted values of average annual GDP growth rates were also calculated for Slovenia and hinterland countries. GDP per capita in hinterland countries was used as the GDP growth weight[14]. Weights are the OECD's data on hinterland countries for 2012. The table below shows weighted average annual GDP growth rates in Slovenia and hinterland countries between 2010 and 2060.

Table 10 Average GDP growth rate in Slovenia and hinterland countries between 2010 and 2060

	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
Average	1.7	1.8	1.7	1.6	1.3	1.2	1.1	1.1	1.0	1.0	1.1

The table shows that in the period between 2010 and 2060 the average annual GDP growth rate in Slovenia and hinterland countries will decline from 1.8 per cent in 2015 to 1.1 per cent in 2060. The movement in average annual GDP growth rates is also shown in the diagram below.

[14] Breakdown of Gross Domestic Product per capita in its components

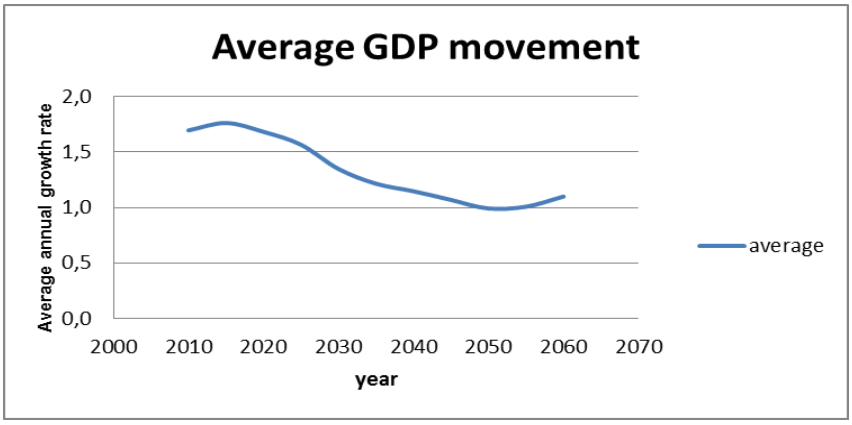


Figure 44 Movement of average annual GDP growth rates

3.9.5. Productivity forecast

The table below shows the forecast of a gradual reduction in productivity growth in all hinterland countries by 2060, except in Italy and Hungary. The forecast productivity growth in 2060 amounts to 1.5 per cent annually in all countries, except in Slovenia, where it will amount to 1.0 per cent annually.

Table 11 Projection of average annual productivity growth rates

	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
Austria	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Czech Republic	2.2	2.5	2.0	1.9	1.8	1.8	1.8	1.8	1.7	1.6	1.5
Germany	0.9	1.3	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Hungary	1.1	1.5	0.9	1.5	2.1	2.1	2.1	2.0	1.8	1.7	1.5
Italy	0.2	0.4	0.9	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Poland	2.5	2.9	2.3	2.2	2.1	2.1	2.1	2.0	1.8	1.7	1.5
Slovakia	3.2	3.8	2.8	2.4	2.0	2.0	2.0	1.9	1.8	1.7	1.5
Slovenia	0.7	0.8	0.9	1.0	1.1	1.1	1.1	1.1	1.0	1.0	1.0

The movement of average annual productivity growth rates is also shown in the diagram below.

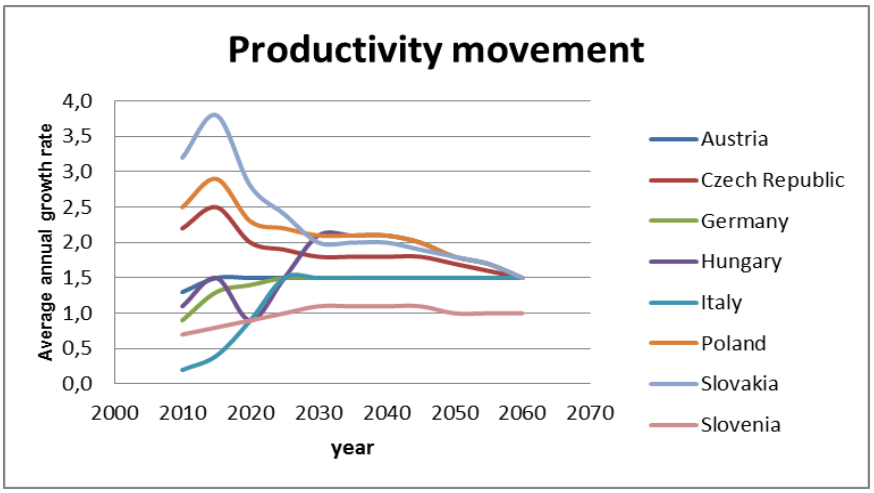


Figure 45 Projection of average annual productivity growth rates

Average weighted values of average annual productivity growth rates were also calculated for Slovenia and hinterland countries. GDP per working hour was used as the productivity growth weight[15]. Weights are the OECD's data on hinterland countries for 2012. The table below shows weighted average annual productivity growth rates in Slovenia and for hinterland countries between 2010 and 2060.

Table 12 Average productivity growth rates in Slovenia and hinterland countries between 2010 and 2060

	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
Average	1.4	1.7	1.5	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.4

The table shows that, in the period between 2010 and 2060, average annual productivity growth rates in Slovenia and hinterland countries will decline from 1.7 per cent in 2015 to 1.4 per cent in 2060. The movement of average annual GDP growth rates is also shown in the diagram below.

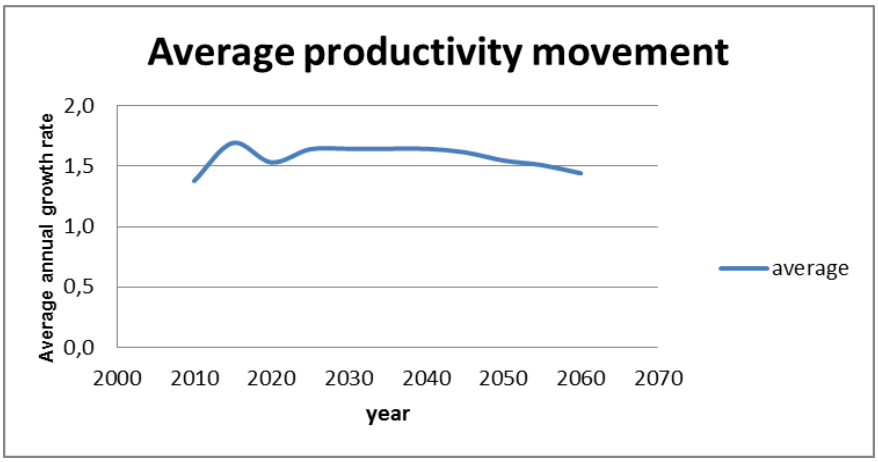


Figure 46 Movement of average annual productivity growth rates

3.9.6. Employment forecast

The table below shows a forecast gradual reduction in employment in all hinterland countries by 2060.

Table 13 Projection of average annual employment growth rates

	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
Austria	0.7	0.2	0.0	–0.2	–0.2	–0.1	–0.1	–0.2	–0.2	–0.3	–0.2
Czech Republic	–0.1	–0.3	–0.2	–0.2	–0.1	–0.3	–0.3	–0.5	–0.6	–0.5	–0.3
Germany	0.5	0.0	–0.4	–0.8	–1.1	–1.0	–0.7	–0.7	–0.8	–0.8	–0.7
Hungary	–0.7	–0.7	0.5	0.3	–0.3	–0.7	–1.0	–1.0	–0.9	–0.8	–0.7
Italy	0.2	0.3	0.9	0.3	–0.1	–0.3	–0.4	–0.3	–0.1	0.0	–0.1
Poland	1.8	0.5	–0.3	–0.6	–0.6	–0.7	–1.0	–1.2	–1.3	–1.2	–0.9
Slovakia	0.1	–0.7	0.2	0.1	–0.3	–0.8	–1.1	–1.2	–1.2	–1.0	–0.6
Slovenia	–0.1	0.0	0.1	0.0	–0.2	–0.4	–0.6	–0.7	–0.7	–0.5	–0.2

[15] Labour productivity levels in the total economy

The movement of average annual employment growth rates is also shown in the diagram below.

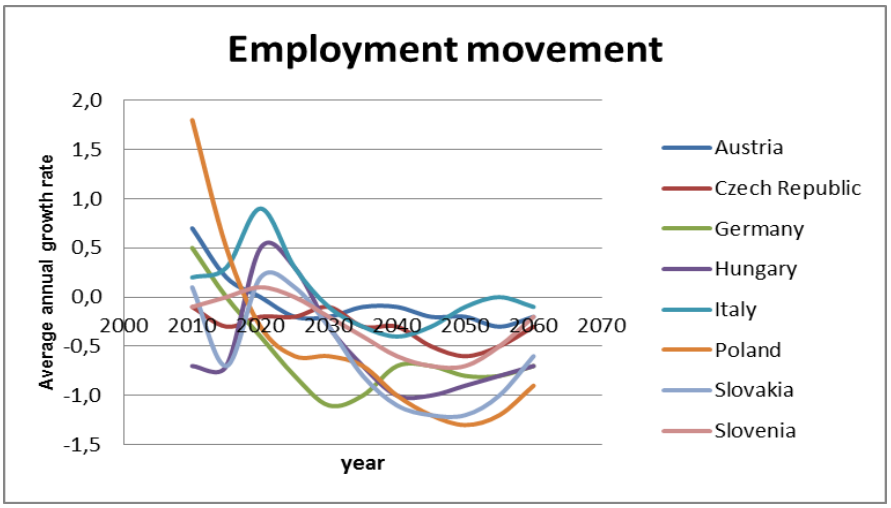


Figure 47 Projection of average annual employment growth rates

Average weighted values of average annual employment growth rates were also calculated for Slovenia and hinterland countries. GDP per capita in hinterland countries was used as the employment growth weight[16]. Weights are the OECD's data on hinterland countries for 2012. The table below shows weighted average annual employment growth rates in Slovenia and hinterland countries between 2010 and 2060.

Table 14 Average annual employment growth rates in Slovenia and hinterland countries between 2010 and 2060

	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060
Average	0.3	0.0	0.1	–0.2	–0.4	–0.5	–0.6	–0.7	–0.7	–0.6	–0.4

The table shows that, in the period between 2010 and 2060, the average annual employment growth rate in Slovenia and hinterland countries will decline from 0 per cent in 2015 to -0.4 per cent in 2060. The movement of average annual GDP growth rates is also shown in the diagram below.

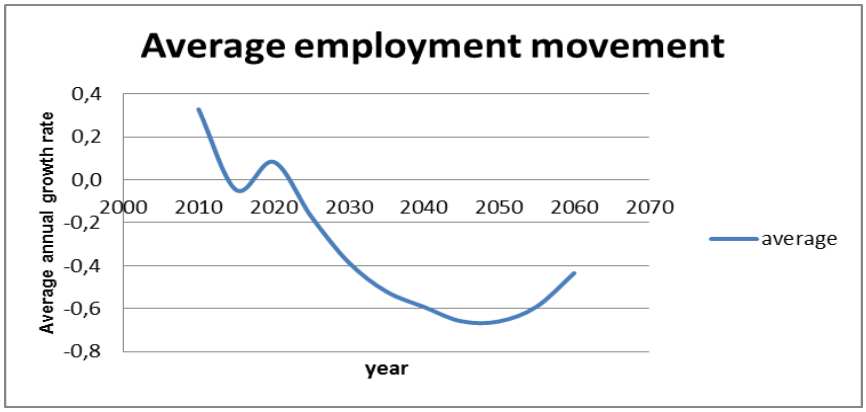


Figure 48 Movement of average annual employment growth rates

[16] Breakdown of Gross Domestic Product per capita in its components

3.9.7. Transport forecasting for the ports of Koper, Trieste and Rijeka, and Ljubljana Jože Pučnik Airport

3.9.7.1. Ports of Koper, Trieste and Rijeka

Transhipment volumes through the north Adriatic ports is the direct basis for the assessment of land freight transport that is bound for ports. Therefore, the demand for land freight transport with an origin or destination in ports is determined with an equation which includes growth in transhipped cargo and an elasticity factor.

The transhipment forecast is based on the pan-European forecast, which uses the TRANS-TOOLS model, and a study prepared by NAPA (*North Atlantic Ports Association*).[17][18] which encompasses the ports of Koper, Rijeka, Trieste and Venice.

Forecasts of traffic volumes in the port of Koper were prepared for 2015, 2020 and 2035; traffic for intermediate periods was determined through linear interpolation.

Table 15 Forecast of transhipment volumes through the port of Koper (net tonnes/year)

Type of cargo	2010	2015	2020	2025	2030	2035
Containers	4,302,543	7,335,000	10,800,000	13,200,000	15,600,000	18,000,000
Goods in general	1,445,651	1,805,000	2,175,000	2,426,667	2,678,333	2,930,000
Vehicles	533,300	740,000	1,145,000	1,196,667	1,248,333	1,300,000
Liquids	2,727, 014	3,500,000	4,000,000	4,000,000	4,000,000	4,000,000
Bulk goods	5,504,963	8,030,000	9,320,000	9,703,333	10,086,667	10,470,000
Total	**14,513,471**	**21,410,000**	**27,440,000**	**30,526,667**	**33,613,333**	**36,700,000**

Source: NAPA and Luka Koper

In 2008, 16,050,448 tonnes of goods were transhipped through the port of Koper. In 2009 and 2010, the volume of transhipped goods declined, but then began to grow again. The volume of transhipped goods will grow by approximately 70 per cent by 2020 and will more than double by 2030. The volume of goods shipped in containers will grow most.

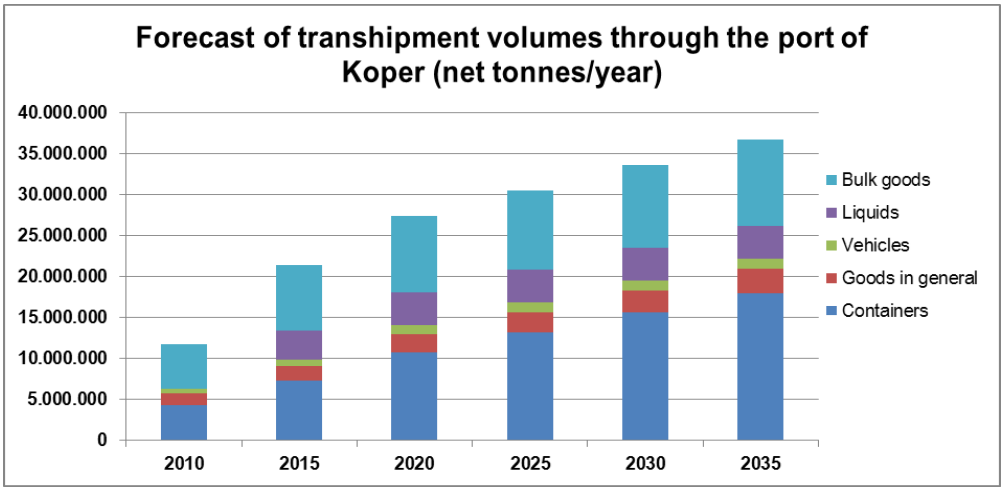


Figure 49 Forecast of total transhipment through the port of Koper (net tonnes/year)

17 Summary of Market study on the potential cargo capacity of the North Adriatic ports system in the container sector (NAPA), Final Report, MDS Transmodal Limited Study, January 2012.

18 Feasibility study for the new Divača–Koper railway line, Section Divača–Črni Kal, Section Črni Kal–Koper, DRI, January 2012.

High transhipment growth is justified by cheaper and quicker transportation to the north Adriatic ports and Central Europe in comparison with the north Atlantic ports. High growth at the port of Koper will be facilitated by the anticipated modernisation of the port.

The increased scope of transhipment will also affect the growth of land freight transport; an elasticity factor of 1.00 was applied.

All types of cargo (48 million tonnes in 2008) are transhipped through **the port of Trieste**, but liquid cargo predominates (over 80 per cent of all cargo). This is the most important north Adriatic port for the transhipment of crude oil. A pipeline runs from the port of Trieste to Ingolstadt, which connects Italy, Austria and Germany with its branches, and distributes oil to Central Europe.

Based on the aforementioned forecasts, it is estimated that transhipment through Trieste will grow at a similar rate as in Koper. Transhipment will grow by approximately 70 per cent by 2020 and will more than double by 2030. Since most cargo will still be liquids, which will largely be transported via pipelines, transhipment in Trieste will continue to put less burden on rail and road infrastructure.

According to transhipment volumes, **the port of Rijeka** is still weaker than Koper (12 million tonnes of transhipment in 2008). Liquid cargo also predominates in Rijeka (approximately 50 per cent of total transhipment), while container transhipment is relatively weak. The port of Rijeka is not connected to a pipeline; therefore, cargo is also transported by rail and road.

It is assessed that transhipment quantities through the port of Rijeka will grow slightly, i.e. by 85 per cent by 2020, and by 2.5-times by 2030. The higher growth is particularly due to more cargo transported in containers.

The ports of Venice and Ravenna have their own gravitation hinterland, especially in northern Italy, and thus do not significantly affect traffic conditions in Slovenia. Therefore, their impact on land transport in Slovenia was not taken into consideration.

3.9.7.2. Ljubljana Jože Pučnik Airport

In August 2010, a master plan for the long-term development of Ljubljana Jože Pučnik Airport was drafted.[19] The long-term development of passenger and freight transport was also anticipated within this framework.

Since 2008, air transport at this airport has been declining (by 14.4 per cent in 2009). However, further growth is anticipated in the long term, i.e. growth is expected to almost double from 2008 to 2030. The relatively high (at an average annual rate of 3.35 per cent annually up to 2040) is anticipated largely on the basis of the airport‘s favourable geostrategic location.

[19] Summary of the Master plan for the Ljubljana Jože Pučnik Airport, Aerodrom Ljubljana, HOCHTIEF Airport, August 2010

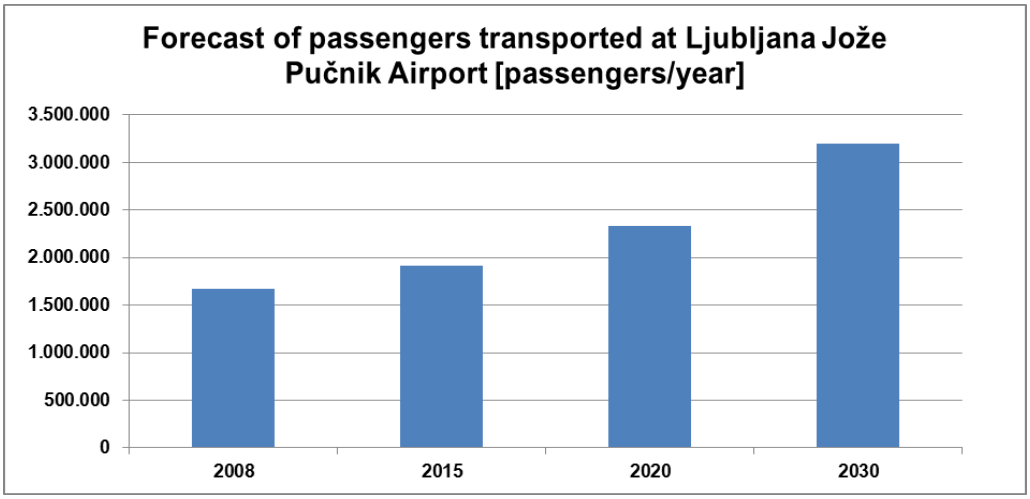


Figure 50 Forecast of passengers transported at Ljubljana Jože Pučnik Airport

Table 16 Forecast of passengers transported at Ljubljana Jože Pučnik Airport

Year	Passengers transported
2008	1,673,050
2015	1,909,860
2020	2,330,848
2030	3,191,805

Source: HTA, Symbios (the study was carried out before 2008; therefore, 2008 is forecast in the table; approximately the same number of passengers were actual transported in 2008 as forecast).

Table 16 and Figure 50 show that the number of passengers transported is expected to grow by approximately 40 per cent by 2020 and by 90 per cent by 2030.

The anticipated growth is expected to be followed by an expansion of activities and modernisation of equipment at the airport. A new 36,275 m^2 passenger terminal is expected to be constructed, followed by manoeuvring areas, the apron, the access system, the Aeropolis Ljubljana business and logistics centre, a multimodal logistics centre with a railway connection, parking areas, cargo facilities, hangars, GSE and secondary airport facilities.

The construction of the multimodal logistics centre and a terminal with a connection to the Jesenice–Ljubljana railway line is expected to result in high growth in freight transport. The volume of air freight transport is expected to grow from the current 10,000 tonnes per year to 60,000 tonnes by 2040. The volume of road freight transport is expected to grow from the current 7,200 tonnes per year to 100,000 tonnes by 2040. Thus transport is expected to have grown 14-fold by 2040[20], which means that it is expected to grow 10-fold by 2030.

In the next two decades, the development of the airport is expected to generate over 4,500 jobs and another 500 indirectly, which is a total of 9,500.

Ljubljana Jože Pučnik Airport is heading for very ambitious development. The greatest change is expected to take place in freight transport. However, such intensive development by 2030 is somewhat doubtful. In the light of past developments, the development of passenger transport is within normal parameters, whereas the development of freight transport is probably exaggerated or unattainable by 2030. According to our assessment, the

[20] 'Jože Pučnik Airport as the logistic centre' feasibility study, Symbios, 2007

forecast for new jobs is also exaggerated, since there will not be more employed persons or jobs in Gorenjska in 2030 compared to 2008.

Due to air transport growth road transport will also grow. For all scenarios in the calculation of passenger traffic production, an elasticity factor of 1.00 is taken into account, which was established for past development. Mode choice is determined by the model. In this forecast, the same growth rate as for passenger transport is also taken into account for road freight transport.

3.9.8. Bases of transport supply forecast

The previous chapter includes a presentation of the anticipated socio-economic changes which drives transport. Other factors, especially transport costs, transport policy measures, network transport offer and political changes, also affect transport.

Travel and transport costs

In the CETRA and PRIMOS models, the transport network supply is expressed by a generalised cost or generalised time, which is the sum of monetary and non-monetary travel costs. Monetary costs include paid directly costs (fuel, vehicles services, tyres, tolls, user fees, tickets for public transport, loading costs, unloading costs, transhipment costs, etc.), while non-monetary costs concern the travel and transport time from door to door which is required for the trip to be completed.

This chapter includes a presentation of the direct monetary costs incurred by a trip or by transportation, which are included in the prognostic transport model. In addition, the value of time is also determined, whereby monetary costs are converted into time.

Parameters of travel costs in Central Europe

The parameters of travel costs are based on the baseline scenario, which, together with other scenarios, was analysed in the TRANSvisions project in 2009. The values used in the model are shown in Table 17.

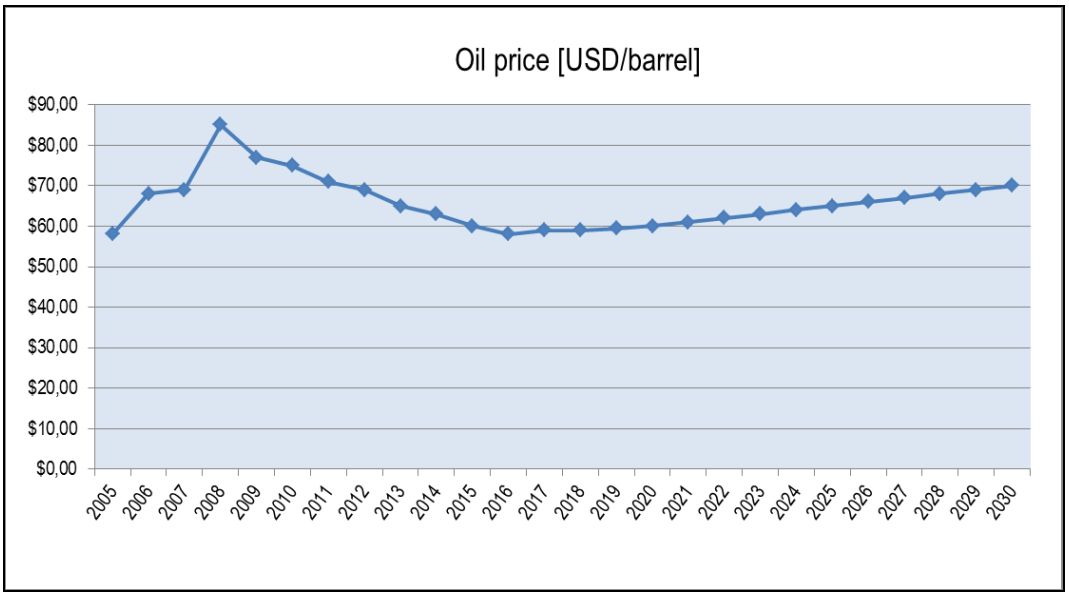
Table 17 Travel costs used in the transport model (increase or reduction considering the base year of 2005)

Parameter	Year	
	2020	2030
Ticket price for bus and train	50% of GDP growth	50% of GDP growth
Fuel costs for private vehicles	7%	7%
Costs of road trucks	4%	4%
Costs of rail freight transport	–10%	–10%
Internalisation of external costs		
Passenger transport	0	0
Rail freight transport	Costs of noise, air pollution and crowds	Costs of noise, air pollution and crowds

The value of time for passenger transport is determined on the basis of the anticipated growth in gross domestic product in Europe.

Fuel prices are determined on the basis of the anticipated fuel prices prepared by the US Government in 2008.[21]

[21] US Energy Information Administration, 2008



Source: EIA, forecast in 2008 (prices 2006)

Figure 51 Forecast of oil price movement by the *US Energy Information Administration*, 2008

According to this forecast, a price reduction is anticipated by 2016, which will be followed by slow growth. Thus the fuel prices by 2030 are expected to be approximately 20 per cent higher than in 2005. However, since it is expected that fuel consumption will decline by 0.5 per cent due to more efficient car engines and other factors, fuel consumption will realistically grow by only 7 per cent (expressed in prices from 2005).

It is assumed that in 2030 there will be very few zero-emission vehicles. Therefore, the same costs are assumed for these vehicles as for emission-producing vehicles.

The operating costs of heavy goods vehicles are composed of various costs, such as fuel, lubricants, vehicle services, drivers' salaries, insurance and other costs. Approximately two thirds of costs are related to travel time, while one third relates to the distance travelled. Due to the technological development of vehicles, efficient planning of vehicle use and significant competition, a slight growth in costs related to distance travelled is expected, i.e. by four per cent by 2030 (at fixed prices).

Direct monetary costs include tolls and other costs. Tolls around Europe differ greatly. In some countries, a flat-rate toll is paid via vignettes, and in some countries, tolls differ for private vehicles and trucks. Elsewhere, there is no toll. Tolls are not paid in Finland, Sweden, Denmark, Germany, Benelux, Great Britain or the Baltic states. It is assumed that in 2030, the toll system will be the same as in 2005.

From 1999 to 2006, the price of train tickets within the EU-25 increased by 9 per cent (at fixed prices), while the price of bus tickets grew by 17 per cent during the same period. During this same period, GDP grew by 17 per cent. Considering the fact that rail public passenger transport is expected to have a more important role in the future, it is assumed within the TRANS-TOOLS model that the price of a public transport ticket will not increase by 2030 by more than a 50 per cent of GDP growth. The absolute upper limit of the increase in ticket price is 30 per cent compared to 2005.

The model takes into account for 2020 the same values of parameters as for 2030.

The costs within the generalised cost of freight transport which are taken into account in both prognostic periods are the same as at present.

The internalisation of external costs in this forecast is not taken into account.

Parameters of travel and transport costs in Slovenia

The anticipated parameters of travel and transport costs are based on assumptions similar to those in the European transport model.

The value of time for 2020 and 2030 is determined on the basis of the anticipated growth in GDP in Slovenia with an elasticity factor of 1. This is the prevailing practice in developed European countries. Nevertheless, opinions differ on this matter.

At a later date, Slovenia is expected to end its vignette system for private vehicles and transfer to tolling in free traffic flow, which is taken into account in the transport model.

Parking policy, which considerably affects mode choice, is also taken into account for passenger transport in 2020 and 2030.

The future prices of fuel and public transport tickets, and of other costs are determined in the same manner as at the Central European level, i.e. on the basis of oil price movements prepared by the US Government and of the assumption that the increase in the price of public transport tickets will be relatively lower. For the calculation of the generalised cost of freight transport, the same amount of costs as currently is taken into account.

The parameters of travel costs in Slovenia used in the transport mode are presented in Table 18.

Table 18 Transport costs for 2020 and 2030 used in the transport model, prices from 2009 (absolute value or as the share of increase or reduction compared to 2008, expressed in percentages)

Parameter	Year	
	2020	2030
Value of time		
Business trip	EUR 9.56/h	EUR 13.64/h
All other purposes of a trip	EUR 3.14/h	EUR 4.09/h
Ticket price		
Train	EUR 0.080/km	EUR 0.093/km
Bus	EUR 0.134/km	EUR 0.155/km
Private vehicle fuel and maintenance costs	1%	14%
Costs of road trucks		
Light goods vehicles	6%	21%
Heavy goods vehicles	4%	13%
Tolling in free traffic flow		
Private vehicles	EUR 0.050/km	EUR 0.050/km
Buses	EUR 0.137/km	EUR 0.137/km
Light goods vehicles	EUR 0.090/km	EUR 0.090/km
Heavy goods vehicles	EUR 0.199/km	EUR 0.199/km
Parking prices in bigger towns	0 to + 5%	0 to + 25%

At a later date, tolling in free traffic flow is expected to be introduced on motorways and expressways. The same amount of toll per unit as prior to the introduction of vignettes is taken into account. It is assumed that the real price of tolls will not change by 2030.

The availability of car parks and **the cost of parking** significantly affect the choice of passenger transport mode.

Network and political bases

At the Central European level, the anticipated new construction and modernisation of the railway network is taken into account, i.e.:

- railway:
  - in Italy, the modernisation of the Venice–Palmanova/Trieste line is taken into account;
  - in Austria, the modernisation or new construction of the Villach–Klagenfurt–Graz–Vienna line and the Linz–Vienna–Bratislava line is taken into account;
  - in Hungary, the current situation is taken into account;
  - in Croatia, the current situation is taken into account;
- roads:
  - in all neighbouring countries, the current situation is taken into account, as most of the motorway system has already been constructed.

It is expected that Croatia and Serbia will join the EU by 2030. The accession of the latter is especially important, as this will mean the simplification of border procedures and greater attractiveness of transport routes through Belgrade and Zagreb for Romanian, Bulgarian, Turkish and other traffic flows.

3.10. ANALYSIS OF THE DO-NOTHING ALTERNATIVE – ESTABLISHING PROBLEMS AND PROPOSING MEASURES

3.10.1. Introduction

In order to justify the need to take action in the field of transport and transport infrastructure, an analysis of the do-nothing alternative was carried out: what it would mean for the Republic of Slovenia if it took no action in this field (the so-called do-nothing alternative), except to maintain the existing situation (thus not worsening it).

On this basis, we determined potential measures for transport and transport infrastructure development in Slovenia.

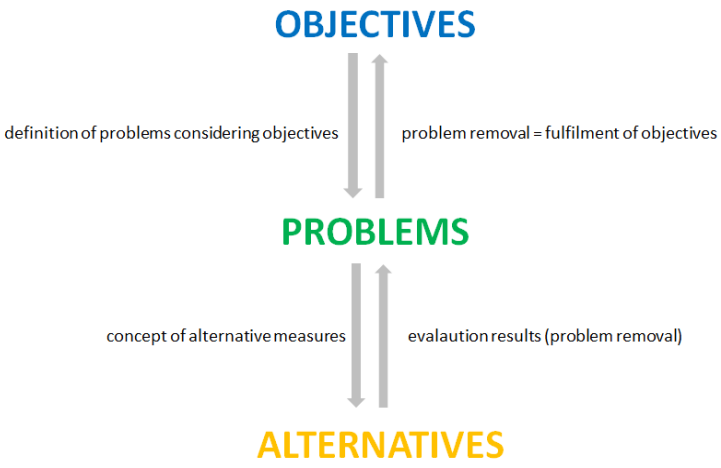


Figure 52 Designing and evaluating alternatives

The design of measures and sets of measures is based on the objectives we wish to attain (which were determined in the previous phases of preparation), established current and expected problems which deviate from the objectives, and on measures to solve problems that occur.

Most problems are determined with the CETRA national transport model on the basis of an analysis of the situation with the current transport arrangement in 2011 and 2030. Certain problems were determined on the basis of preliminary studies and reports by shareholders (cycling routes, traffic safety, the port of Koper, airports).

Most measures that solve established problems are determined as alternatives, i.e. several measures are determined to solve one problem. Some measures are in conflict, while some supplement each other.

3.10.2. Modal split

3.10.2.1. Passenger transport

Currently, 69 per cent of trips in Slovenia are carried out by private vehicle, 8 per cent by public passenger transport, 5 per cent by bicycle and 18 per cent walking. If the transport arrangement remains unchanged, 68 per cent of trips in 2030 will be carried out by private vehicle, 7 per cent by public passenger transport, 5 per cent by bicycle and 20 per cent walking (Figure 8). Thus mode choice would not significantly change;the increase in the number of trips would be approximately the same for all transport modes (Figure 52).

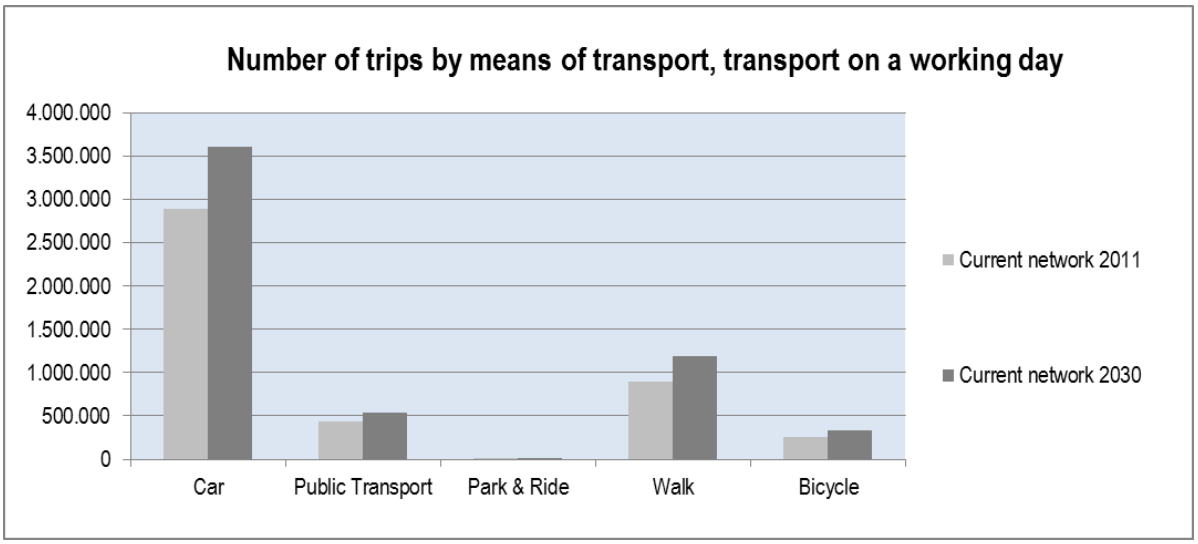
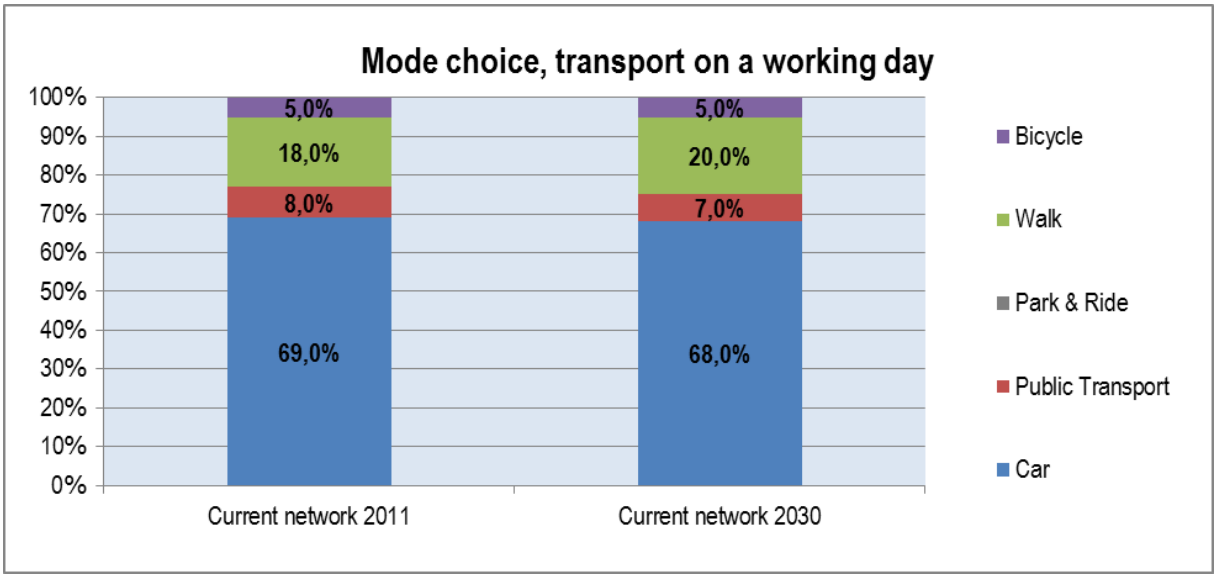


Figure 53 Number of trips in Slovenia in 2011 and 2030



Note: the share of P&R is less than 1 per cent; therefore, it does not appear in the graph.

Figure 54 Modal split in Slovenia

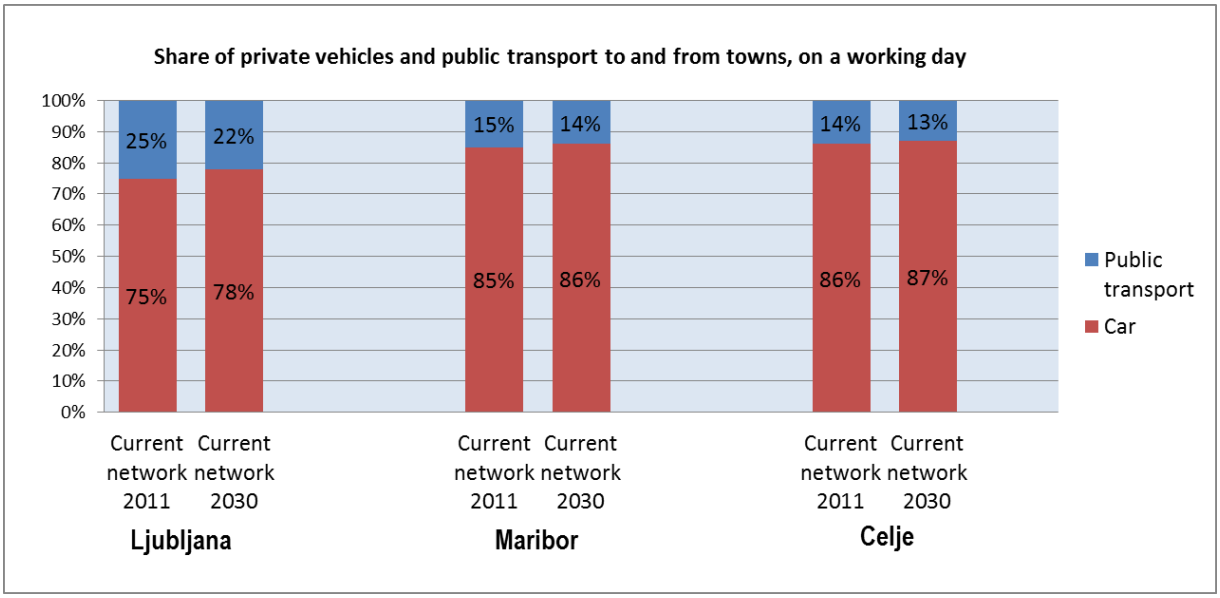


Figure 55 Modal split at entry points to towns

An analysis of entries to, and exits from, larger towns shows (Figure 54) that the share of journeys by private vehicle will slightly increase, while trips by public transport would decline if the transport options remain unchanged.

Desired state:

- The Transport Policy Resolution of the Republic of Slovenia includes *inter alia* an increase in the scope and quality of public passenger road and rail transport.
- The White Paper recommends *inter alia*: a balanced utilisation of transport modes by 2030, and most medium-distance passenger transport by rail.

- The TEN-T regulation adopted in December 2013 emphasises environmentally-friendlier transport modes, including public passenger transport.
- The same objectives are pursued by the Spatial Planning Strategy of Slovenia. In addition, the latter states that a balanced development of the transport and settlement networks, the connection and development of transport hubs and transport and logistics terminal should be developed primarily in order to ensure transport connections among all areas and a more balanced development of all national territory, and to connect with the wider European area. The transport network is being developed as a comprehensive system connecting all forms and types of transport.

Actual state:

- Spontaneous development orientation: the role of private vehicles and public passenger and non-motorised transport will remain unchanged in Slovenia, while the role of private vehicles will even be slightly enhanced in entries to larger towns.

Finding:

- Mode choice will not spontaneously follow the principles of sustainable development as defined by European and Slovenian strategic documents and legislation. Therefore, this development orientation may be designated as problematic, since it will not contribute to realising EU or national policies.

Measures required to achieve the desired state:

- introduce integrated public passenger transport with a uniform system administrator;
- more public passenger transport at own hub – so-called yellow lanes (increased travel speed);
- increase the frequency of public passenger transport services (during and outside peak hours) and harmonise timetables;
- ensure comfortable and simple transfer between public passenger transport modes;
- restrictive parking policy regarding public car parks in larger towns and the introduction of a P+R system;
- arrange comfortable and safe cycling routes and footpaths;
- restrict and control motorised transport in sensitive populated areas;
- raise awareness of residents in order to change their travel habits;
- better connections between spatial and transport planning at all levels;
- adjust public passenger transport measures to the characteristics of settlements and the needs of specific areas.

Through these measures, mode choice will change in favour of public passenger transport and non-motorised transport modes.

3.10.2.2. Freight transport

In Slovenia, an average of 68 per cent of goods are currently transported by road and 32 per cent by rail. If the transport arrangement remains unchanged, problems with rail capacity will transfer some freight transport back onto roads, while some will bypass Slovenia. In this case, 82 per cent of goods will be transported by road in 2030 and only 18 per cent by rail, as shown in Figure 56.

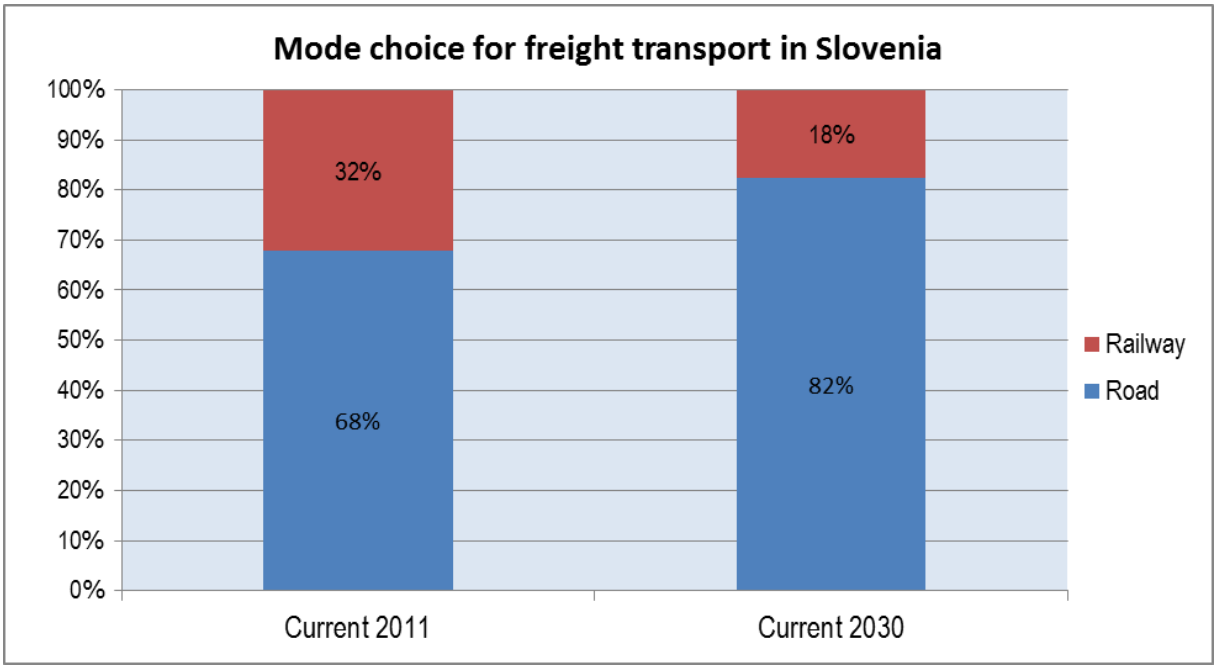


Figure 56 Mode choice for freight transport in Slovenia

Desired state:

- The Transport Policy Resolution of the Republic of Slovenia (2006) states *inter alia*: the majority of freight transport should be carried out by rail.
- The White Paper recommends *inter alia*: 30 per cent of freight transport covering distances of over 300 km should be moved from the roads to the railways by 2030, and 50 per cent by 2050.
- The Spatial Planning Strategy of Slovenia states that, in order to increase the efficiency of traffic flow, the development of intermodal transport connections and a railway network to carry most long-distance freight transport in the future should be stimulated. Parallel to the construction of the Slovenian motorway network, the circumferential system of traffic routes is being developed with regard to needs at the regional level, and the railway network is being modernised to adjust to higher speeds to take over the majority of long-distance freight transport.

Actual state:

- Spontaneous development orientation: due to problems with capacity, especially of the railway system, freight transport will be transferred to roads.

Finding:

- Mode choice will not spontaneously follow the principles of sustainable development or the recommendations of the European and Slovenian strategic documents. Instead, it will develop in the opposite direction from the one desired. Therefore, this development orientation poses a problem.

Required measures:

Greater competitiveness and better quality of rail transport must be ensured. Therefore, the capacity and speed of rail transport must be enhanced, especially by:

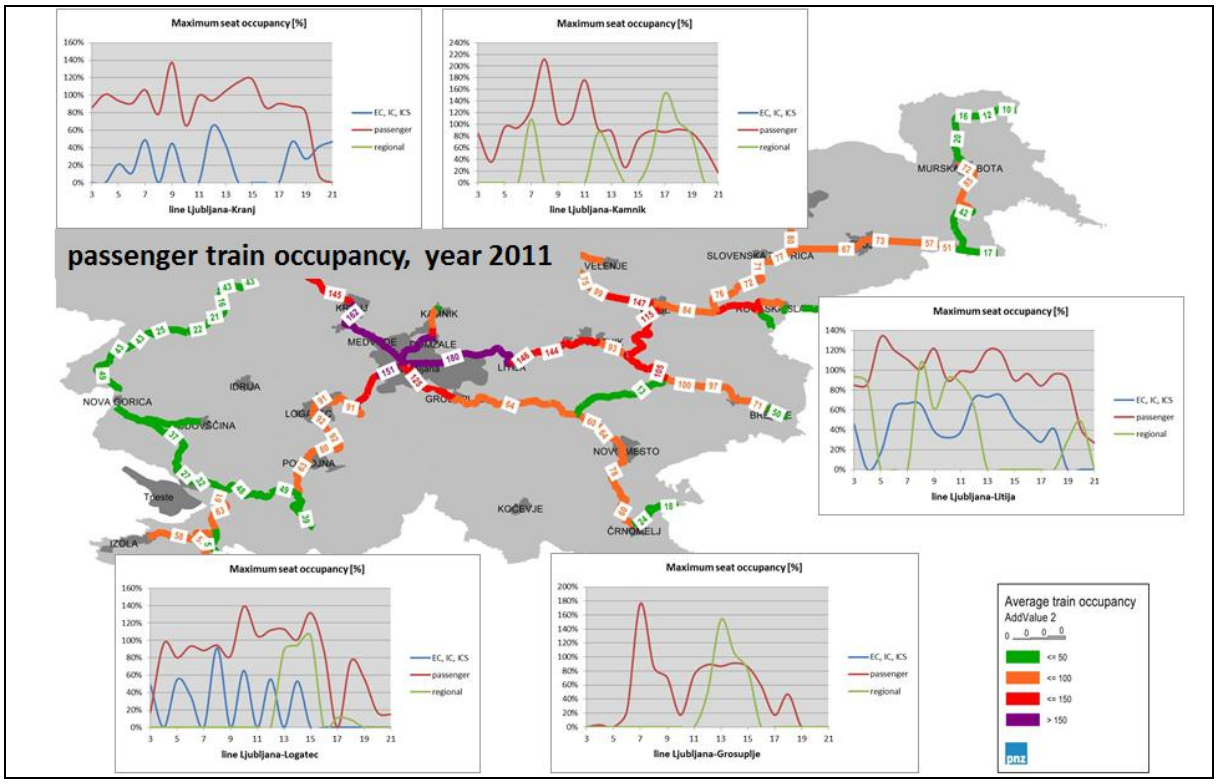
- modernising the core and comprehensive TEN-T networks (introducing ERTMS and interoperability);

- upgrading or constructing the core and comprehensive TEN-T networks by ensuring at least the minimum standards of the TEN-T network (the TSI V-M standard with a minimum speed of 100 km/h);
- constructing logistics centres.

3.10.3. Transport efficiency

3.10.3.1. Railway

The railway system is worn out and outdated, the consequence of insufficient investments, so it is already at the limit of its capacity. Four sections of mail lines and all regional lines are single-track. Following the completion of the electrification of the Pragersko–Hodoš line, a total of 50 per cent of railway lines will be electrified. The permitted speeds of 100 km/h or more are possible only on individual sections of main lines. An axle load of 22.5 t/axle is not facilitated throughout the entire network of main lines.



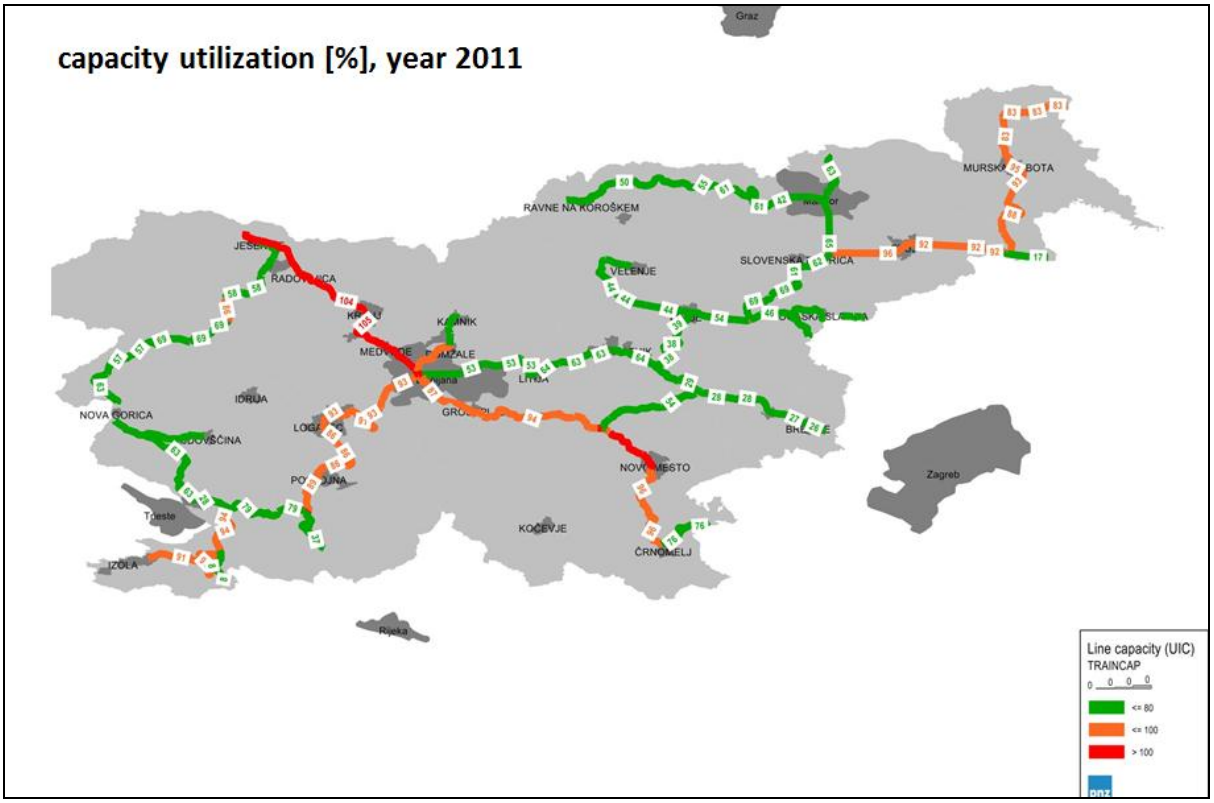
Note: where the value exceeds 100 (highlighted in purple and dark red) the comfort of the trip is unacceptably low

Figure 57 Analysis of the quality of public passenger rail transport, 2011

The railway system is problematic in terms of both passenger and freight transport. Figure 58 shows that the comfort of trips especially around Ljubljana is unacceptably low due to the insufficient frequency of service. Therefore, rail public passenger transport in this area is less attractive.

Figure 57 shows the current exploitation of the railway network capacity by taking into account all passenger and freight trains. The figure shows that the most problematic line in terms of capacity is the Gorenjska line (including the Ljubljana hub), followed by the Koper–

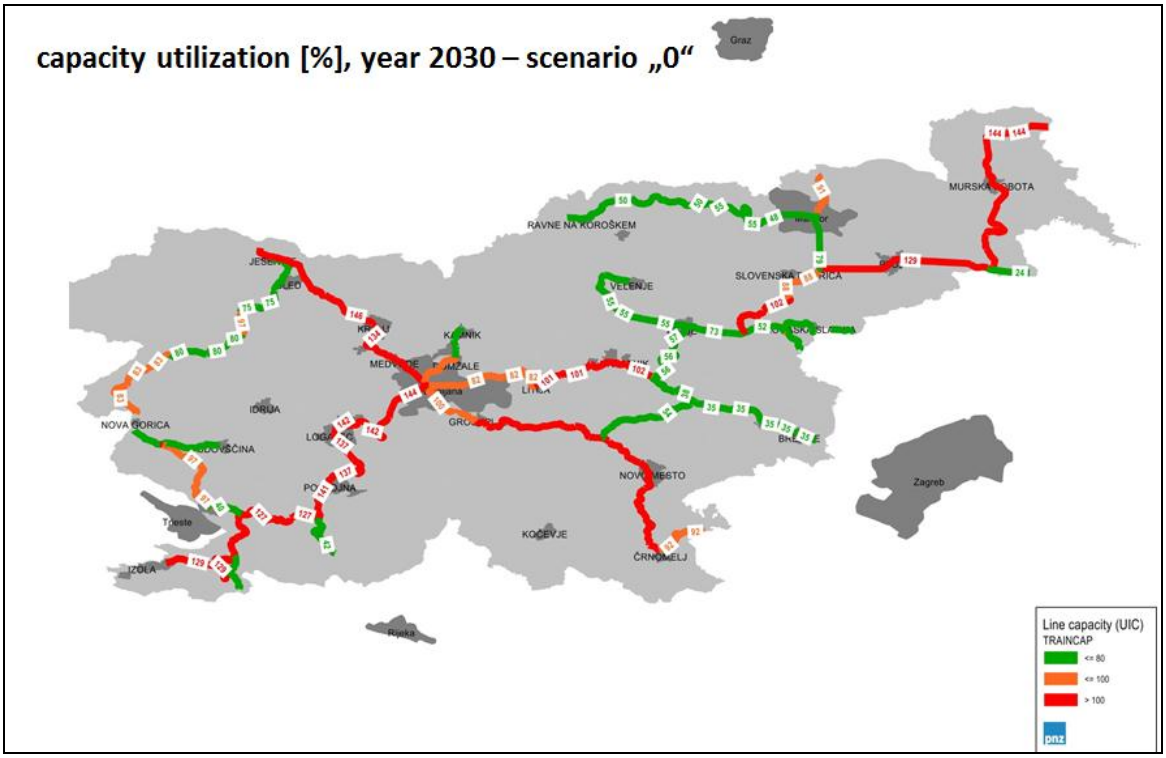
DIvača, Pivka–Ljubljana and Pragersko–Hodoš lines, where modernisation is in progress and will be completed in 2015. All these lines are included in either the main line category or the TEN-T network. Among the regional lines, part of the Kamnik line and almost the entire Dolenjska line pose a problem.



Note: problematic sections are highlighted in red

Figure 58 Capacity utilization of the current railway network, 2011

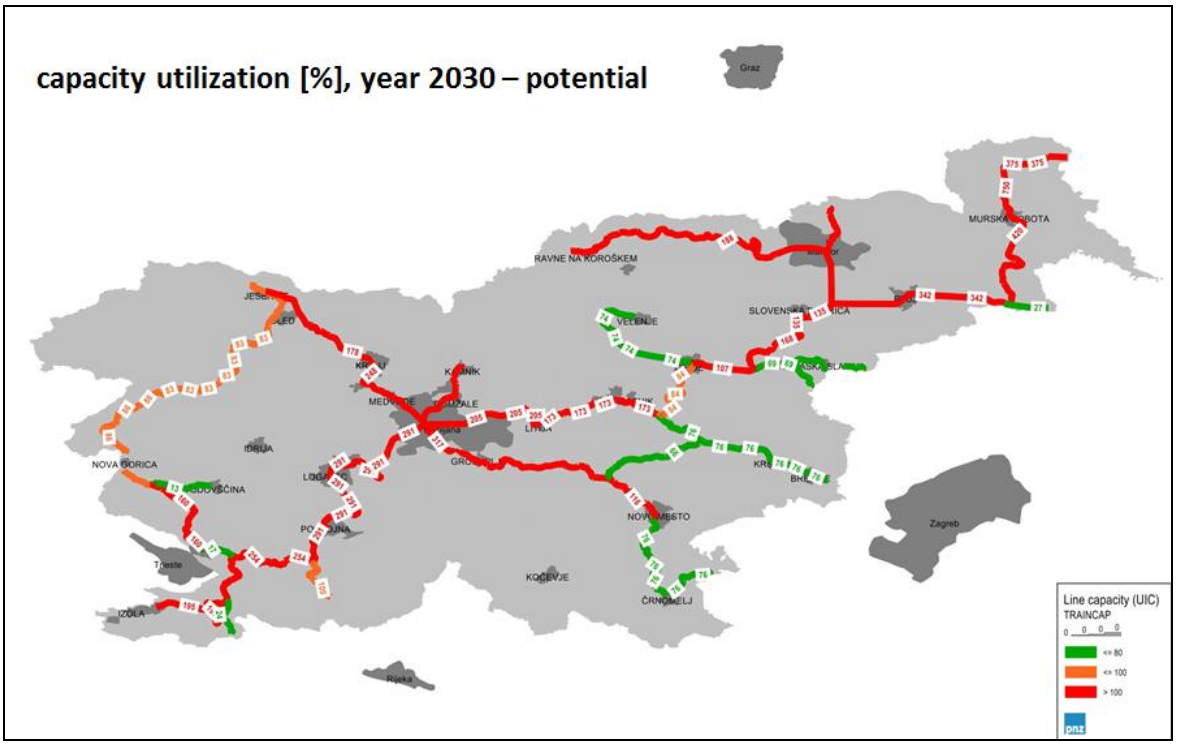
The quantity of transport, especially freight transport, will increase in any case. Therefore, even if the transport options on the majority of the Slovenian railway network remains unchanged, capacity will be exceeded, despite the fact that a significant share of freight transport would bypass Slovenia and move onto roads (Figure 59).



Note: problematic sections are highlighted in red

Figure 59 Capacity utilization of the current railway network in 2030 by taking into account current transport system in Slovenia and around it

The change in mode choice and greater role of railway require the construction of a modern railway network. Considering that the network defined as the TEN-T network in Slovenia and around it will be regulated in accordance with standards applicable to this network, the demand on the Slovenian railway network will be considerably higher. In this case, the capacity of all lines on the TEN-T network and some regional lines would be exceeded, as shown in Figure 60.



Note: problematic sections are highlighted in red

Figure 60 Capacity utilization of the current railway network in 2030 by taking into account potential demand if the railway network in Slovenia and neighbouring countries met suitable TEN-T standards

If there are no investments to improve the railway transport service by 2030, capacity will be exceeded on the following sections:

main lines:

- Ljubljana, Zidani most, Divača, Pragersko hubs,
- Koper–Divača (single track),
- Divača–Ljubljana,
- Jesenice–Ljubljana (single track),
- Pragersko–Hodoš (single track),
- Ljubljana–Zidani Most,
- Zidani Most–Pragersko,
- Pragersko–Maribor,
- Maribor–Šentilj (single track);

regional lines:

- Ljubljana–Novo mesto,
- Prvačina–Sežana,
- Kamnik–Ljubljana,
- Dravograd–Maribor.

Almost all main lines, i.e. almost the entire TEN-T network, and some regional lines which should have an important role in passenger transport represent bottlenecks.

Almost none of the entire network of main lines or the TEN-T network allows for speeds of 100 km/h or more. Only the Pragersko–Maribor section allows for speeds over 100 km/h, and certain individual sections allow for a speed of 100 km/h (Ljubljana–Litija, Sevnica–Dobova, Kranj–Ljubljana, Celje–Grobelno, Pragersko–Središče–state border, Murska Sobota–Hodoš–state border, Borovnica–Ljubljana). The regional network as a whole does not allow for such speeds.

The realistic speeds are significantly lower than those declared, since so-called slow zones occur due to extraordinary events, poor track conditions, defects, etc. For example, in 2012, slow zones were introduced on 14 sections of main lines, where speeds were reduced by 30–70 per cent[22].

Important sections of main lines or the TEN-T network do not allow for an axle load of 22.5 t/axle, i.e.:

- Zidani Most–Celje,
- Maribor–Šentilj.

The modernisation of the Pragersko–Hodoš and Dolga Gora–Poljčane lines is in progress. Such a load-bearing capacity is also not permitted on any regional line.

The completion of the projects in progress will see all main lines or the lines on the TEN-T network electrified, while no regional line is electrified.

Conditions are already poor and continue to deteriorate, which is shown in increased delays and reduced travel speeds, especially of freight transport. In passenger transport, the average delay is approximately 2.8 min. per 100 train km, while travel speed is approximately 51 km/h. For the time being, these values are neither worsening nor improving. Freight transport poses a greater problem. The average delay in 2009 was 39.6 min. per 100 train km, while in 2010 it had already reached 78.8 min per 100 train km. In the same period, travel speed declined from 28.8 km/h to 24.4 km/h.[23]

[22] Report on the current conditions of slow speeds on Slovenian railways, Slovenske železnice–Infrastruktura, d.o.o., Ljubljana, January 2013

[23] Resolution on the National Programme for the Development of Transport Infrastructure in the Republic of Slovenia by 2020 with a vision by 2030 (ReNPRJI), draft document, version 6.4, Ministry of Infrastructure, 27 September 2012

Note: insufficient axle load is highlighted in blue

Figure 61 Load-bearing capacity of railway tracks

Figure 61 shows the load-bearing capacity of railway tracks. The required axle load of 22.5 t/axle is not ensured throughout the entire TEN-T network (highlighted in blue), which reduces the capacity of the system and prolongs driving times.

Desired state:

- The capacity of the Slovenian railway network, especially the core and comprehensive TEN-T networks, must be able to realise future demand based on the extraordinary potential of the Slovenian area, which has pan-European significance.
- The core TEN-T network must meet the minimum standards of this network, i.e. all lines must be electrified, and they must allow for freight trains 740 m long, a load-bearing capacity of 22.5 t/axle and a speed of at least 100 km/h.

Actual state:

- The frequency of the service and comfort of passengers on more used lines is unacceptably low.
- The entire TEN-T network is a bottleneck, and as such does not facilitate the required capacity and suitable reliability of the timetable.
- Following the completion of works on the Pragersko–Hodoš line now in progress, the core TEN-T network will be fully electrified. It only partially facilitates the use of 740 m long trains, does not allow for the axle load of 22.5 t/axle on all sections, and most lines do not allow for a speed of 100 km/h.

Finding:

- The core and comprehensive TEN-T networks in Slovenia do not ensure the required capacity and acceptable comfort of passengers,
- or the minimum TEN-T and TSI standards.

Proposed measures

The Slovenia railway system requires complete renovation. All sections of the TEN-T network must be modernised and upgraded by 2030. If necessary, new structures must be built.

The required minimum standards must be met throughout the entire core TEN-T network. For the future arrangement of the TEN-T lines, the TSI V–M standard must be introduced and the length of trains of 740 m must be allowed.

The following measures must be realised:

- electrification of the entire Slovenian railway network;
- introduction of the ERTMS (ETCS level 2) throughout the entire main or TEN-T network;
- modernisation, upgrading and new construction of the TEN-T and regional networks.

3.10.3.2. Roads and parking for trucks

The conditions on the current road network during peak hours on an average working day and tourist peak during the tourist season by 2030 were analysed. It was established that the capacity of certain roads will be exceeded by 2030, even if a modern and competitive railway system is constructed, and high-quality public passenger transport is introduced, i.e.:

- western, northern, southern and eastern Ljubljana bypass,
- Ljubljana–Brezovica–Vrhnika–Postojna motorway,
- Ljubljana–Domžale motorway,
- Ljubljana–Grosuplje motorway,
- Draženci–Gruškovje,
- Medvode–Ljubljana,
- Jagodje–Lucija,
- Lesce–Bled,
- Škofljica–Ljubljana,
- Cesta Proletarskih brigad Road in Maribor,
- Vojkova cesta Road in Nova Gorica,
- Koper–Dragonja,
- Velenje–Arja vas,
- Celje–Laško,
- Levičnikova cesta Road in Novo mesto and
- Ptuj.

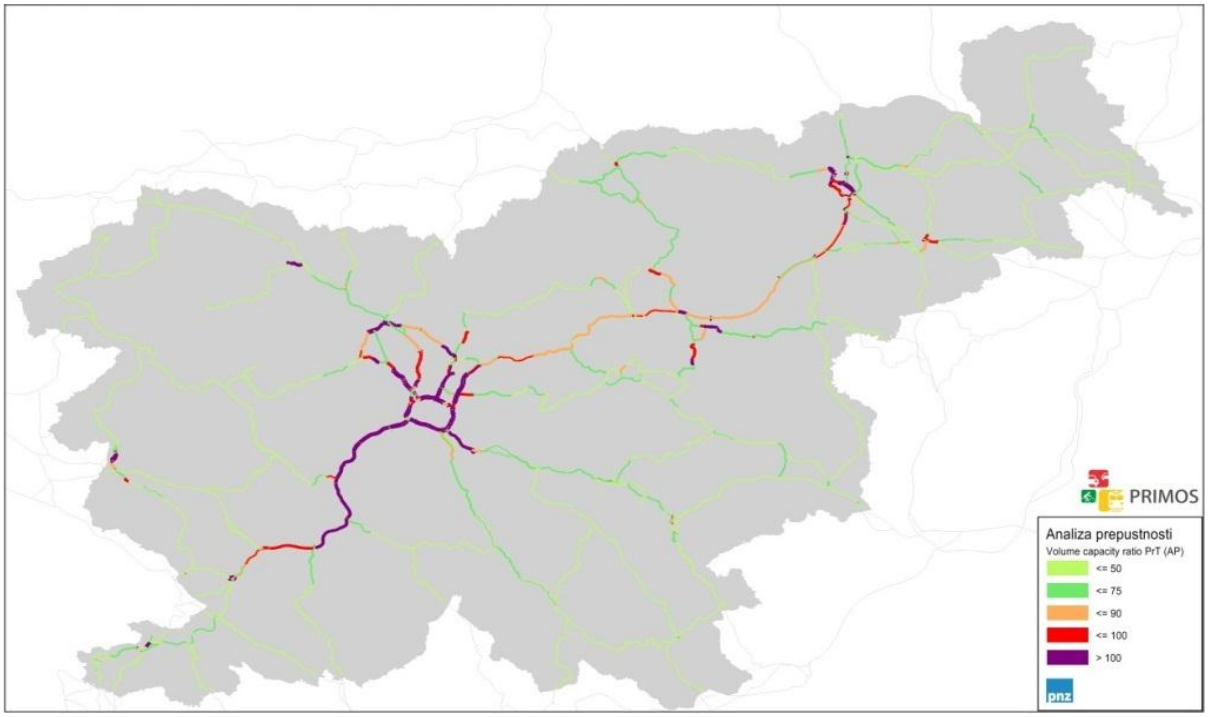


Figure 62 Roads with exceeded capacity during afternoon peak hour in 2030 (highlighted in purple)

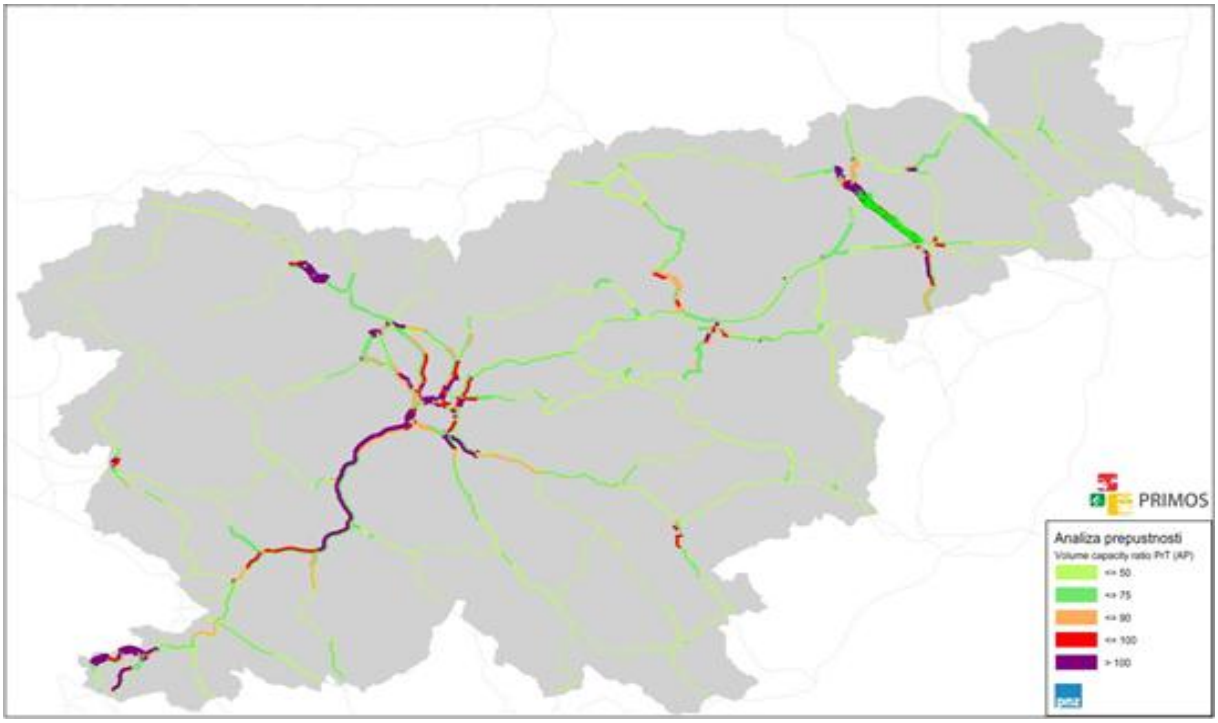
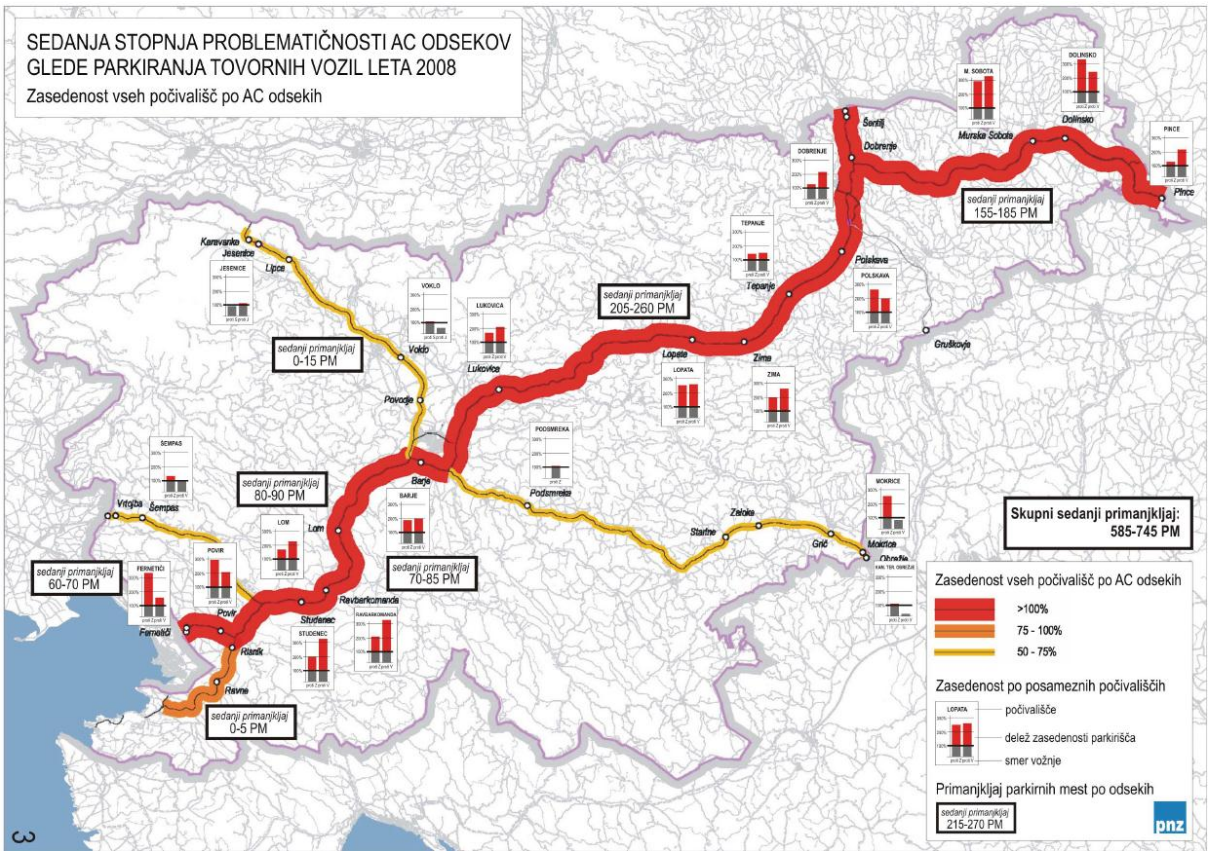


Figure 63 Roads with exceeded capacity during tourist peak in 2030 (highlighted in purple)

Capacity will have to be increased where it is exceeded (highlighted in purple). The capacity of these roads would also be exceeded even if rail and public transport were to play a greater role.



Parking space shortage by sections is shown as occupancy in %, PM = parking space

Figure 64 Parking space shortage at rest areas for heavy goods vehicles in 2008

There is a great shortage of parking areas for heavy goods vehicles along Slovenian motorways. The following shortage was established[24]:

- in 2008, there was a shortage of 600 to 700 parking spaces; almost the entire shortage is shown within the Mediterranean Corridor Fernetiči/Koper–Ljubljana–Šentilj/Pince;
- in 2023, there will be a shortage of 2,000 to 3,000 parking spaces, of which 75 per cent will be within the Mediterranean Corridor.

[24] A study on ensuring parking areas for freight vehicles along Slovenian motorways and expressways, PNZ, 2009

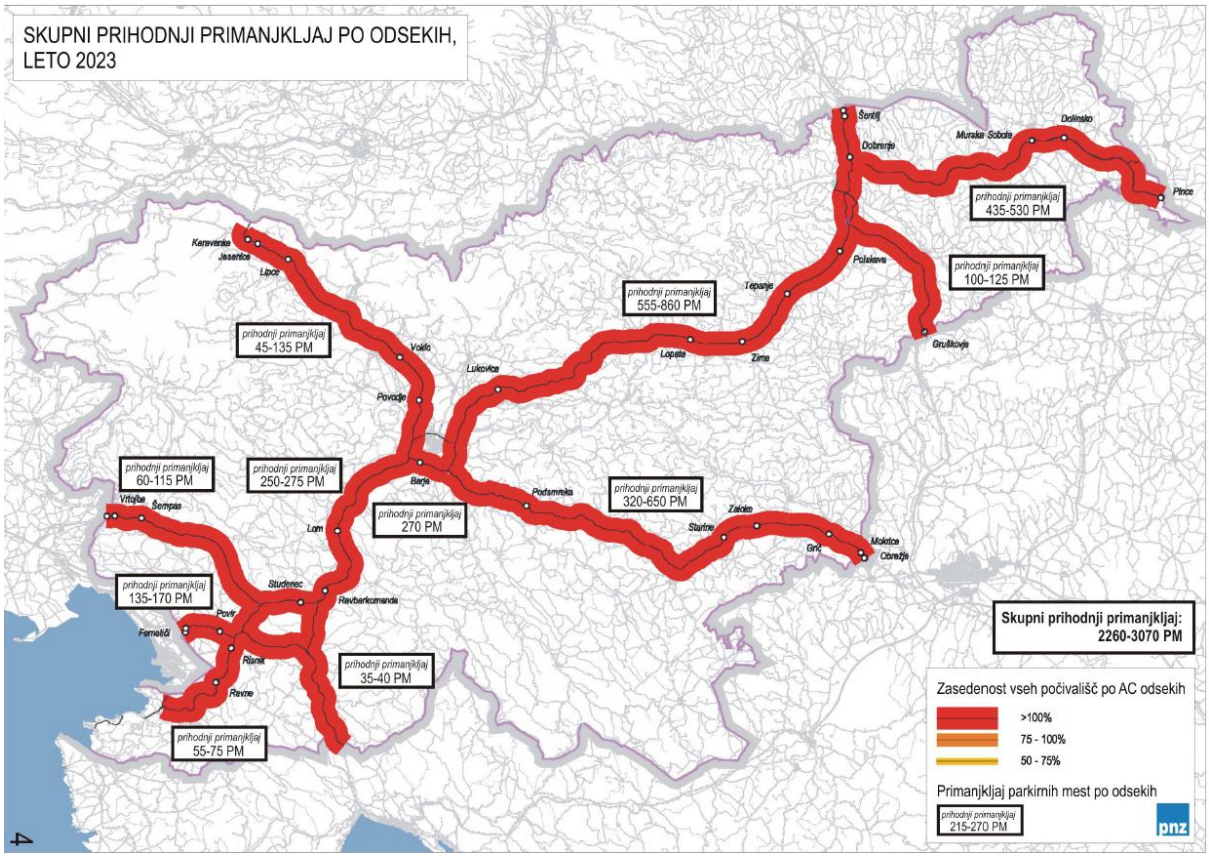


Figure 65 Parking space shortage at rest areas for heavy goods vehicles in 2023

Desired state:

- Demand should be lower or equal to the supply (v/c < 1); when the demand exceeds the supply, congestion occurs on roads, which means a loss of time, money, and more exhaust gas and noise pollution.
- A sufficient number of parking spaces must be available for drivers to carry out their tasks normally, abide by the regulations on traffic limits and road-traffic safety, and not endanger other road users.

Actual state:

- Despite the modernisation and establishment of a more efficient railway system, the organisation of more competitive public transport, and the establishment of the P+R system in Slovenia by 2030, capacity will be exceeded on approximately 230 kilometres of roads.
- Even if investments in railway change mode choice in favour of rail transport, there will still be a shortage of at least 2,000 parking spaces on motorways and expressways.

Finding:

- Despite the introduction of a sustainable transport policy, the Slovenian road network will still experience inconsistencies between demand and supply, and bottlenecks on the more important road network, which will produce congestion and related negative consequences. Therefore, this situation must be defined as problematic.
- Poor conditions in parking areas for trucks will become even worse, which will further worsen the problem.

Required measures

Bottlenecks and congestion on roads must be eliminated, i.e. the capacity of road sections with problems must be improved.

Capacity will be improved by:

- introducing ITS, especially on motorways, to exploit existing roads better;
- expanding roads;
- constructing bypasses; and
- new construction.

In addition, bottlenecks in parking areas for trucks must also be eliminated. This will be done by:

- introducing the ITS system in order to ensure steady occupancy of all parking areas (1st measure of ITS) and more intensive use of parking areas (2nd measure of ITS);
- establishing new parking areas.

These measures will eliminate bottlenecks on roads and in parking areas for trucks.

3.10.3.3. Public passenger transport

3.10.3.3.1. Public passenger transport system in Slovenia

The public passenger transport system in Slovenia is fragmented and not managed comprehensively. It is divided into three sub-systems:

1. interurban line bus passenger transport carried out by concessionaires as a public utility service;
2. rail passenger transport carried out by Slovenske železnice as a public utility service;
3. urban line passenger transport.

Each sub-system is organised differently, and there is no uniform public passenger transport manager to manage and direct the entire field of public passenger transport by managing all the transport needs of passengers and adjusting public passenger transport options to them, as well managing the entire financial and technical field (uniform electronic ticket, financial flows and settlements between carriers, and supervision of the implementation of the system). 88.142 million passengers were transported by all carriers in 2013. In 2013, the number of passengers grew in all three sub-systems, and the long-running decline in the number of passengers transported ended. 51,529,254 million EUR were ensured from public funds to implement the public utility service of rail passenger transport in 2013; EUR 20,679,108 million were ensured for compensation for the public utility service of interurban passenger transport by buses, and EUR 18 million (estimate) were ensured for the implementation of urban passenger transport.

The public utility service (PUS) in interurban road transport is carried out by 36 concessionaires, which are privately held companies, except for Javno podjetje Ljubljanski potniški promet. In order to carry out the PUS, the concessionaires sign a contract with the state (ministry responsible for transport) based on the number of kilometres travelled and flat rate costs per kilometre. Flat rate costs per kilometre travelled are determined on the basis of expert analyses which take into account the costs of vehicles, amortisation, the costs of work, fuel, the company and financing, including profit attributable to a well-managed company. The norm price changes in accordance with the movement of costs, and negotiations between concessionaires and the state. The state provides the concessionaires the payment of maximum compensation, which is the difference between flat rate costs per

kilometre and total income earned by the concessionaires by passenger transport. However, the compensation has an upper limit, which is an average of 26 per cent of the norm price. Income earned by concessionaires in the market is both private (payment for passenger transport and baggage, payment for advertising services in transport modes, contracts with companies) and public (subsidies exercised by beneficiaries for the subsidised transportation of secondary school and university students, subsidies of local communities to maintain non-profitable lines or for above-standard connections).

The public utility service in internal rail transport is carried out by Slovenske železnice on the basis of a contract with the Ministry of Infrastructure. 15.6 million passengers were transported by SŽ Potniški promet in 2013. The Contracting Authority of the public utility service provides the funds for implementing passenger transport and co-finances it in the amount of EUR 4.5291 (including VAT) per train kilometre travelled. In 2013, EUR 40.6 million income was realised on the basis of a contract with the Ministry of Infrastructure (an instalment paid for insufficiently paid compensations for the PUS for the period between 2003 and 2009 amounted to EUR 10.8 million).

Urban line passenger transport is the responsibility of local communities and is carried out in 17 local communities. Pursuant to the Road Transport Act, urban passenger transport must be organised and carried out by all municipalities with over 100,000 residents, while other local communities may carry it out in order to improve population mobility. The most important part of this sub-system is organised in Ljubljana, where public line passenger transport is carried out by Javno podjetje Ljubljanski potniški promet (LPP) as a mandatory public utility service; it transports 42 million passengers annually. The system in Maribor is organised in a similar manner (it was reorganised in 2011), while the availability of other towns' urban passenger transport is significantly lower and is subsidised. The municipalities of Murska Sobota, Nova Gorica and Velenje offer free urban passenger transport.

Road passenger transport

Public line transport is road passenger transport between bus stations, important bus stops and bus stops along a certain line according to a timetable, general transport conditions and price list. Thus, this is passenger transport available to everyone under the same conditions and is carried out with a certain frequency along predetermined routes in Slovenia. During the journey, passengers may board or alight at predetermined stops. Public line passenger transport, except urban transport and transport of primary school pupils, is ensured by the state as a public asset through public utility services.

Table 19 Road passenger transport in Slovenia between 2002 and 2011

Year	Number of passengers transported (in 1,000)	Annual increase in the number of passengers transported (in %)	Passenger kilometres (in 1,000 km)	Annual increase in passenger kilometres (in %)
2005	39,759		862,015	
2006	37,964	-4.5	850,266	-1.4
2007	38,532	1.5	817,116	-3.9
2008	38,751	0.6	814,836	-0.3
2009	36,720	-5.2	776,737	-4.7
2010	34,720	-5.4	733,204	-5.6
2011	32,404	-6.3	702,384	-4.2
Average annual growth in %	/	-3.4	/	-3.2
Total growth in %	/	-18.5	/	-18.5

Note: only road public line transport, excluding urban transport and transport of passengers by taxis.
Source: Statistical Office of the Republic of Slovenia, June 2014 (the data for the period between 2002 and 2011 were collected on the basis of the old methodology).

Between 2005 and 2011, the number of passengers transported by road public line passenger transport declined from 40 million to 32 million or by 18.5 per cent. Passenger

kilometres declined by the same amount (18.5 per cent). The long-running decline in the number of passengers in public bus line transport continued during the entire observed period from 5 to 6 per cent annually. The decline in the number of passengers came to a halt in 2012 when a new system of subsidised transport for secondary school and university students was introduced, which ensured a minimum increase in the number of passengers transported in 2013. The introduction of bargain prices of tickets for beneficiaries of subsidised transport showed that suitable measures in pricing policy for monthly tickets and minimum harmonisation of timetables may halt the constant decline in passenger numbers and lay the foundations for reorganising the public passenger transport system.

Table 20 Road passenger transport in Slovenia between 2011 and 2013

Year	Number of passengers (in 1,000)	Annual increase in the number
2010	28,148	
2011	24,968	-11.3
2012	24,523	-1.8
2013	24,828	1.2

Note: only road public line transport, excluding urban transport and transport of passengers by taxis.
Statistical Office of the Republic of Slovenia, June 2014 (the data for the period between 2011 and 2013 were collected on the basis of the new methodology which takes into account the number of passengers recorded in electronic systems).

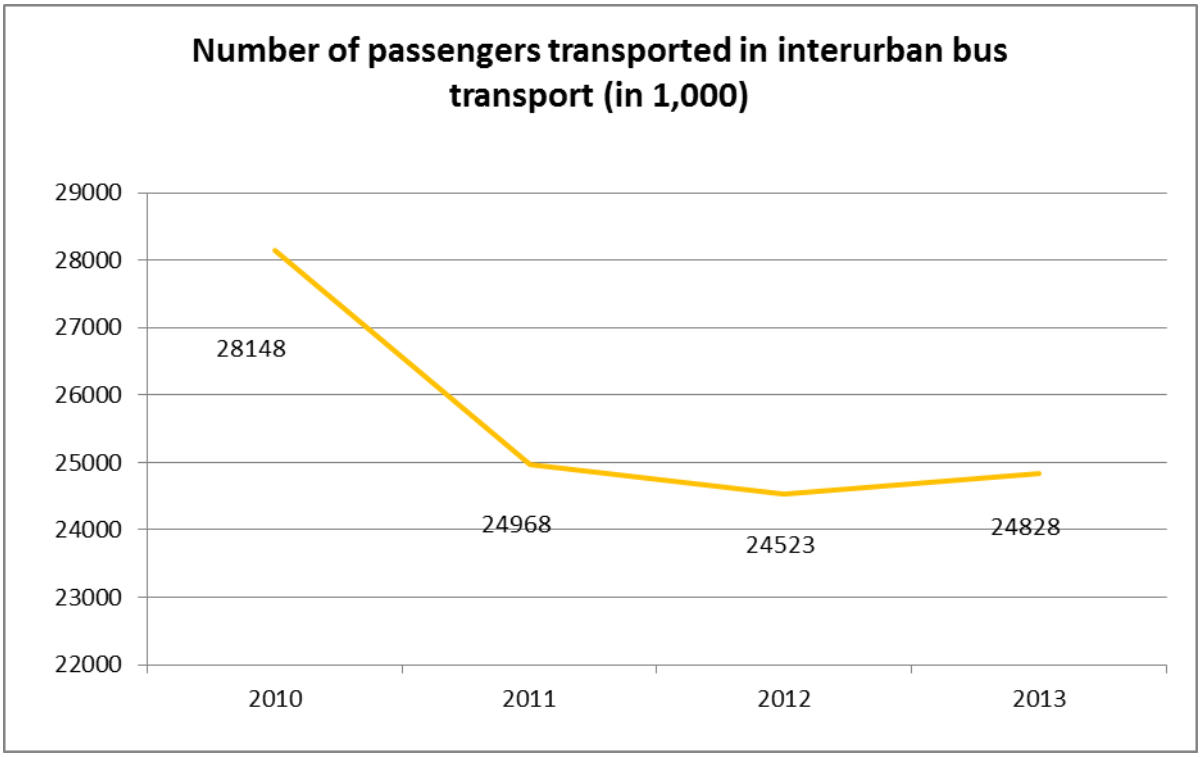


Figure 66 Number of passengers transported in interurban bus transport

The number of passengers transported in urban passenger transport also declined between 2005 and 2013. It declined from 55.9 million to 47.7 million, which is 14.6 per cent of the total decline in the number of passengers transported. The increase in the number of passengers in 2013 was the result of the introduction of a modified system of subsidised tickets, which also facilitates subsiding tickets for urban transport if a passenger is entitled to urban transport due to the distance between an educational institution and bus or train stations or stops, and also of the arrangement of the entire transport field with more consistent supervision, reporting and electronic recording of passenger numbers. In 2013, the declining trend in passenger numbers ended, and the offer was improved, since 19.1 per cent more kilometres were travelled than in the previous year and more than in any year in the

observed period. Most kilometres in urban transport are travelled by LPP, which covered 10.7 million km and transported 42 million passengers in 2013.

Table 21 Urban passenger transport between 2005 and 2013

Year	Number of passengers transported (in 1,000)	Annual increase in number of passengers transported (in %)	Km travelled (in 1,000 km)	Annual increase in km travelled (in %)
2005	55,937		15,813	
2006	53,604	-4.2	15,778	-0.2
2007	51,745	-3.5	15,759	-0.1
2008	51,336	-0.8	16,291	3.4
2009	47,748	-7.0	16,518	1.4
2010	47,210	-1.1	16,370	-0.9
2011	45,980	-2.6	14,990	-8.4
2012	42,760	-7.0	14,307	-4.6
2013	47,751	11.7	17,044	19.1
Average annual growth in %	/	**-1.8**	/	**1.2**
Total growth in %	/	**-14.6**	/	**7.8**

Source: Statistical Office of the Republic of Slovenia, June 2014

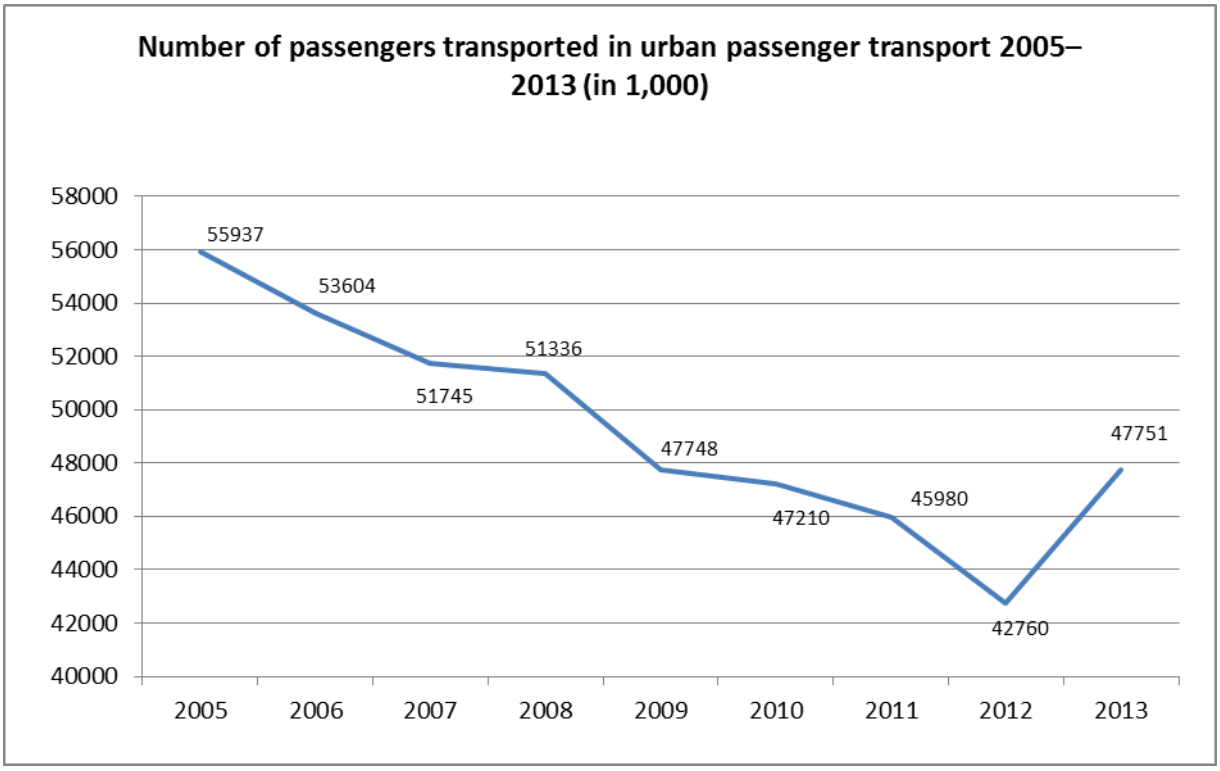


Figure 67 Number of passengers transported (in thousands) in urban passenger transport between 2005 and 2013

Rail passenger transport

Rail passenger transport ensures population mobility on the public rail infrastructure network, where, in addition to the core network lines, it is competitive to road passenger transport. Following the opening of new road sections, the number of passengers transported did not decline as drastically as, for example, in interurban bus transport.

Table 22 Rail passenger transport in Slovenia between 2005 and 2013

Year	Number of passengers transported (in 1,000)	Annual increase in the number of passengers transported (in %)	Passenger kilometres (in million km)	Annual increase in passenger kilometres (in %)
2005	14,917		666.1	
2006	15,275	2.4	675.4	1.4
2007	15,232	-0.3	690.3	2.2
2008	15,753	3.4	712.7	3.2
2009	15,434	-2.0	717.5	0.7
2010	15,294	-0.9	679.5	-5.3
2011	14,838	-3.0	641.3	-5.6
2012	14,622	-1.5	614.0	-4.3
2013	15,563	6.4	635.7	3.5
Average annual growth in %	/	1.3	/	-0.1
Total growth in %	/	4.3	/	-4.6

Source: Statistical Office of the Republic of Slovenia, June 2014 (these are the data for internal passenger transport).

The most important lines according to the number of passengers transported and the annual number of passenger trains are lines **no. 10 state border–Dobova–Ljubljana, no. 30 Zidani Most–Šentilj–state border** and **no. 20 Ljubljana–Jesenice–state border**, where over one million passengers were transported on individual sections.
The most passengers (over 5.3 million annually) departed from stops on line no. 10 state border–Dobova–Ljubljana (the line includes the Ljubljana station). Between 3.1 and 3.3 million passengers departed from stops on line no. 30 Zidani Most–Šentilj–state border, while between 1.5 and 2.0 million passengers departed from stops on line no. 20 Ljubljana–Jesenice.

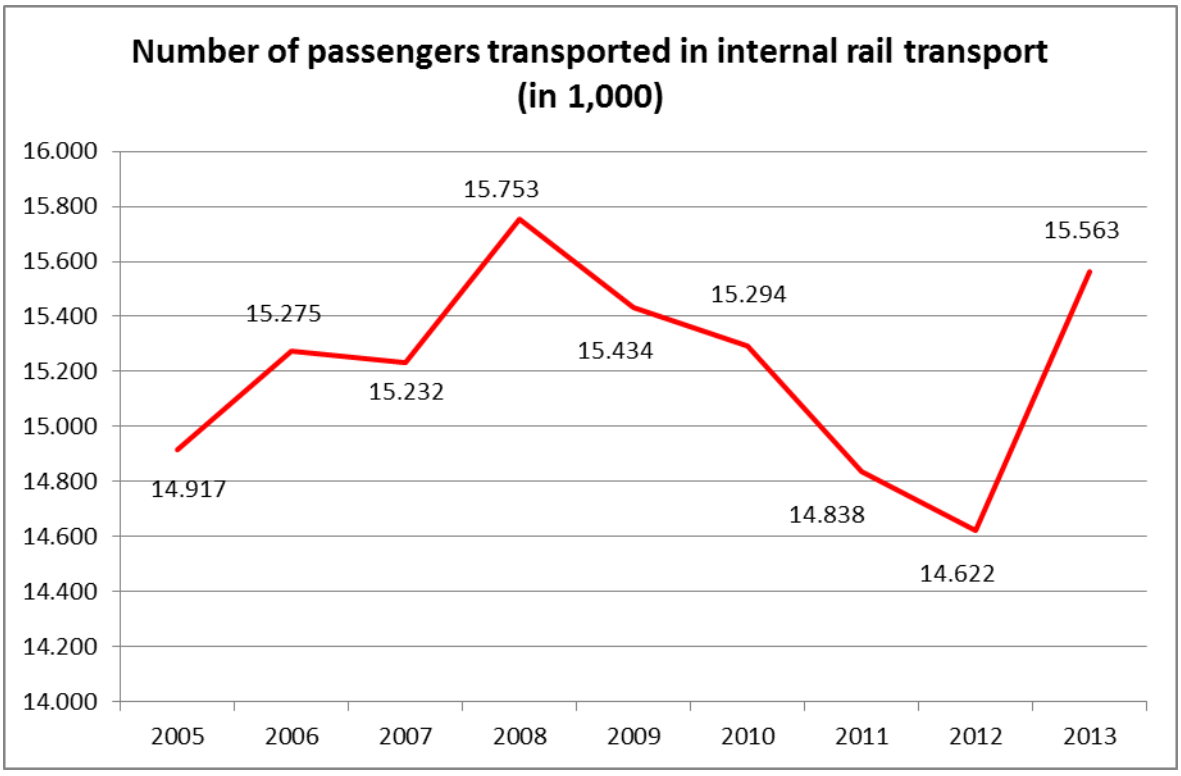


Figure 68 Number of passengers transported in internal rail transport

3.10.3.3.2. Public passenger transport modes

This sub-chapter shows transport modes in view of the following subsystems:

1. interurban line bus passenger transport;
2. rail passenger transport;
3. urban line passenger transport.

Ad 1. Interurban line bus passenger transport

Interurban line passenger transport is carried out by 36 concessionaires with 1198 vehicles. The latter include vehicles which are used by the carrier to execute the public utility service, and vehicles which must be in reserve in accordance with the concession contract to ensure additional services if the number of passengers at a departure is higher than the permitted number of passengers considering the vehicle type-approval and legislation, or if defects or any other problems occur, so that the PUS is carried out in accordance with the timetable. The transport modes proposed by carriers for 2014 are relatively old, as their average age is 8.84 years. Between 40 and 90 vehicles are 1 to 16 years old, while 49 vehicles are older than 16 years. 302 vehicles have exceeded the amortisation period of 12 years which is taken into account in the costs for the compensation calculation for the implementation of the PUS. The display of the numbers of vehicles show that concessionaires have replaced fewer vehicles in the last four years (especially in 2012) than in previous years.

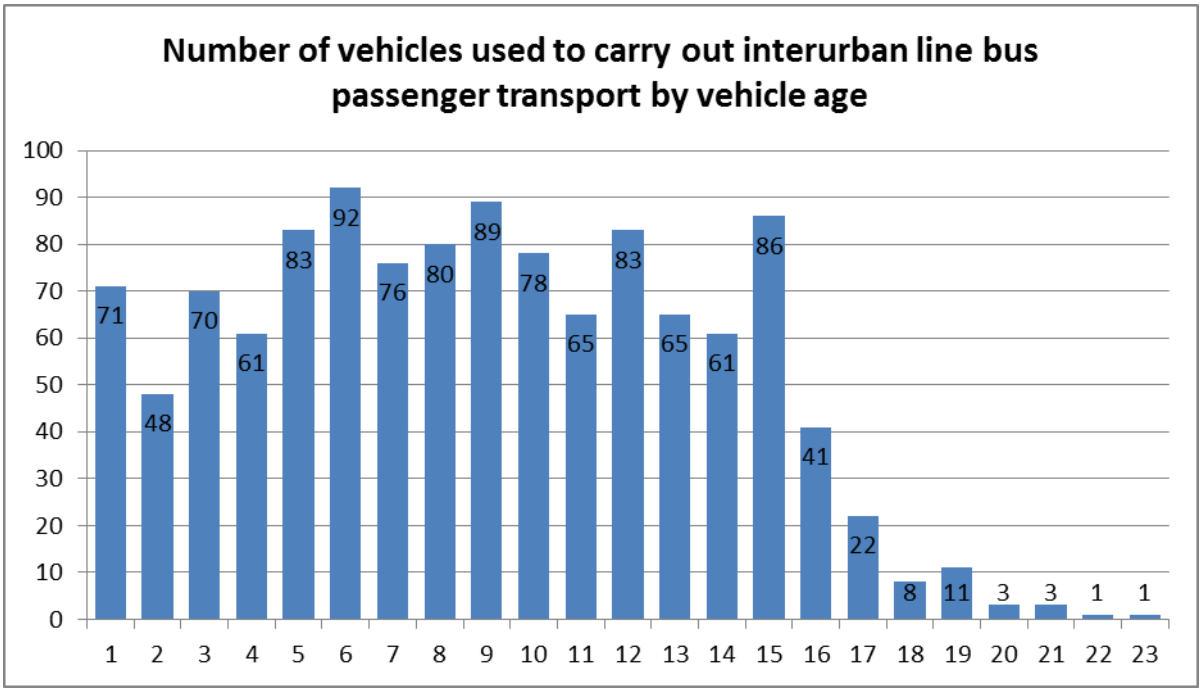


Figure 69 Number of vehicles used to carry out interurban line bus passenger transport

Regarding the engines of vehicles, 282 vehicles are environmentally completely unacceptable, as their engines are in the EURO 0, EURO 1 and EURO 2 categories. Most vehicle engines are in EURO 3, and only 262 engines in EURO 5 or EURO 5EEV. In 2014, no vehicles were proposed with EURO 6 engines or alternative fuel vehicles (CNG or electrical buses). The relatively old age of vehicles poses a problem not only from the aspect of excessive burdening of the environment, but also comfort and a suitable offer for passengers using public transport. The concessionaries travel between 40,000 and 60,000

kilometres annually with one vehicle for the implementation of the PUS, which means that vehicles are being used that have travelled over 500,000 kilometres.

Table 23 Number of vehicles used to carry out interurban line passenger transport considering the age and environmental characteristics of engines

EURO categories	up to 4 years	5 to 8 years	9 to 12 years	Over 12 years	Total
EURO 0-2			2	270	272
EURO 3	2	88	304	32	426
EURO 4	10	219	9		238
EURO 5	238	24			262
Total	**250**	**331**	**315**	**302**	**1,198**

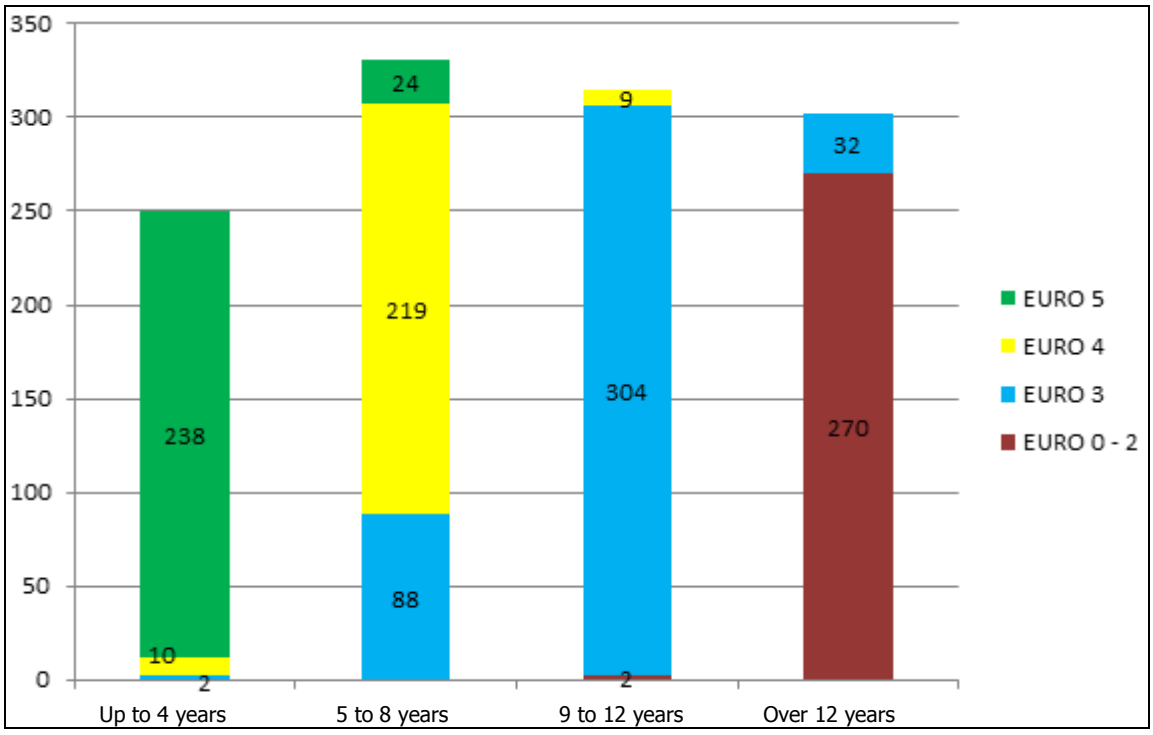


Figure 70 Display of the number of vehicles used to carry out interurban line passenger transport

The new tender for granting concessions anticipates that by 2020 concessionaires will replace all vehicles with EURO 3 engines or less and that at least 20 per cent of vehicles used to implement the PUS will be electrically or CNG powered.

Ad 2. Rail passenger transport

To ensure competitive rail passenger transport, modern, safe, economical and reliable rolling stock is essential. Local passenger trains comprise 88 per cent of the trains offered by Slovenske železnice. Regional trains' share is only 3 per cent, and ICS and international trains' share is slightly lower than 5 per cent. The condition of the transport modes used to carry out local rail passenger transport is thus crucial for the offer to be suitable. In 2011, 77.8 per cent of all passengers transported were workers or secondary school and university students, i.e. daily commuters (including passengers on regional lines). The group of secondary school and university students is the best represented. In 2011, they accounted

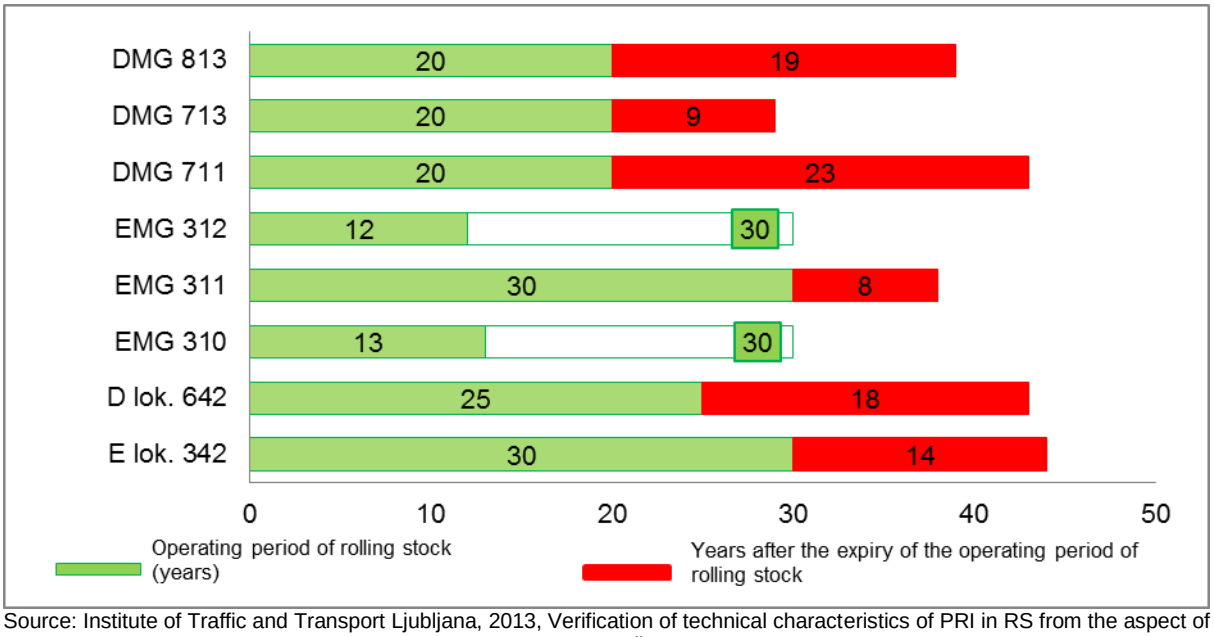
for between 39 and 52 per cent of passengers in internal transport (interurban and local or peri-urban transport, except ICS trains), while workers accounted for almost a third.
The rolling stock of SŽ–Potniški promet has a total of 223 maintained vehicles, of which 121 are traction stock and 102 carriages. Slightly more than half of the vehicles are traction stock, i.e. 8 electric and 4 diesel locomotives, and 39 electric and 70 diesel sets. More than half of the carriages, i.e. 64, are type B (2nd class seats), 1 carriage is type A (1st class seats); 30 carriages or slightly less than a third are type AB (1st and 2nd class seats).

Table 24 SŽ–Potniški promet rolling stock

SŽ–Potniški promet rolling stock	Number of rolling stock	Operating period of rolling stock (years)	Average age (years)	Maximum speed (km/h)
TRACTION STOCK	**121**			
Locomotives	**12**			
Electric locomotives 342	8	30	44	120
Diesel locomotives 642 (shunter)	4	25	43	80
EMG	**39**			
310	3	30	13	200
311	6	30	38	110
312	30	30	12	140
DMG	**70**			
711	6	20	43	120
713/715	25	20	29	120
813/814	39	20	39	100
CARRIAGES	**102**			
Type B (2nd class seats)	2+62			
Type A (1st class seats)	1			
Type AB (1st and 2nd class seats)	30			
Type WR (restaurant carriage)	5			
Type D (baggage carriage)	2			
TOTAL MAINTAINED ROLLING STOCK	**223**			

Source: Institute of Traffic and Transport Ljubljana, 2013, Verification of technical characteristics of PRI in RS from the aspect of purchasing new rolling stock SŽ–Potniški promet, d.o.o.

To carry out its activity of passenger transport, SŽ–PP has 8 electric locomotives, 39 electric sets and 70 diesel sets.
The most numerous and the youngest electric sets are of the 312 series (Siemens Desiro), of which 10 have two units and 20 have three units. The average age of EMG of the 312 series is 12, while the average age of 3 EMG of 310 series is 13 years. 6 EMG of the 311 series are the oldest, i.e. the average of 38 years.
The rolling stock of SŽ–Potniški promet includes a total of 74 diesel traction stock, all of which are maintained. The average age of diesel locomotives of the 642 series and DMG 711 is 43 years, while the DMG 813 locos are slightly younger (average of 39 years) and were renovated between 1988 and 2002 (they were renovated from the 0 series to the 100 series, except 8 DMGs). DMG 713 are the youngest, with an average age of 29 years.



Source: Institute of Traffic and Transport Ljubljana, 2013, Verification of technical characteristics of PRI in RS from the aspect of purchasing new rolling stock SŽ–Potniški promet, d.o.o.

Figure 71 Operating period of rolling stock and display of the expiry of the operating period

The condition of the SŽ–Potniški promet rolling stock neither facilitates a suitable offer on the electrified and modernised Pragersko–Hodoš line nor ensures the preservation of the existing rail passenger transport options. The optimal development of transport infrastructure anticipates 30 per cent growth in the number of passengers in public passenger transport, with which the objectives of sustainable mobility and less investments in the development of road infrastructure could be attained. In accordance with the expected number of passengers transported, the electric sets of the 312 series will have to be rearranged following the electrification of the Pragersko–Hodoš line, as further service on this line with diesel sets and classic trains is not logical.

From the aspect of replacing the withdrawn EMG 311, the new electrification of the Pragersko–Hodoš line, and the ensuring of the required seat capacity, the purchase of 10 new two-level EMGs is well-justified. Most occupied trains are on routes in the wider area of Ljubljana, Celje and Maribor, where the need for more seating on trains is the greatest; therefore, the purchase of new two-level EMGs which are expected to run on the following routes is necessary: Ljubljana–Kranj–Jesenice, Ljubljana–Logatec–Postojna, Ljubljana–Litija, Maribor–Pragersko–Celje.

5 new DMGs will partially replace the withdrawal of 8 DMGs of the 813-0 series (the electrification of the Pragersko–Hodoš line will eliminate the need for DMGs) and improve the offer on the most frequent lines: 21 Ljubljana Šiška–Kamnik Graben and 80 Ljubljana–Metlika–state border (new DMGs with more seats). In addition to replacing the withdrawn DMGs and enhancing seat capacity on the aforementioned two regional lines, the new DMGs will also run on newly established connections to near and larger towns in Croatia.

To improve the existing offer in passenger transport and add other offers, and to reduce costs arising from leasing locomotives from SŽ–Tovorni promet d.o.o. and the use of classic trains in internal transport, the purchase of several system one-level EMGs with direct and alternating rated voltage of 3 kV and 15 kV, which would connect Gorenjska, Ljubljana, Zasavje, Posavje and Štajerska, thus enhancing the offer in long-distance transport (for long-

distance passengers), especially on the Ljubljana–Celje–Maribor and Ljubljana–Jesenice lines, is reasonable. New rolling stock would facilitate connections with nearby Villach and Graz in Austria, and Trieste and Venice in Italy.

Ad 3. Urban line passenger transport

The analysis of the state of vehicles takes into account only vehicles in the two municipalities where the organisation of the PUS of urban line passenger transport is mandatory. The company Javno podjetje Ljubljanski potniški promet d.o.o. carries out transport in the Municipality of Ljubljana, while the MARPROM Mariborski potniški promet public undertaking does the same in the Municipality of Maribor.

To carry out urban public passenger transport, MARPROM manages vehicles which included 45 buses in 2013 (situation as at 1 October 2013). The average age of vehicles intended for the implementation of urban public passenger transport was 11.9 years; 27 buses or 59.9 per cent were older than 15 years, and 2 buses were even older than 19 years.

To carry out urban public passenger transport, Ljubljanski potniški promet manages vehicles which included 208 buses in 2013 (situation as of 1 December 2013). The average age of vehicles intended for the implementation of urban public passenger transport was 10.76 years; 77 buses or 37.9 per cent were older than 15 years, and 27 buses or 12.8 per cent were even older than 20 years.

The vehicle fleet in both towns is rather worn out, and the number of kilometres travelled by most vehicles is higher than anticipated in the vehicles' operating periods. The calculation of a vehicle's operating period takes into account that the vehicle will travel between 700,000 and 800,000 kilometres. In Maribor, only 14 vehicle or 31 per cent had travelled less than 700,000 kilometres, while the remaining 31 vehicles or approximately 69 per cent had travelled more than 700,000, of which 20 vehicles had travelled more than 1 million kilometres. The situation in Ljubljana is similar, if we take into account the fact that an urban bus in Ljubljana travels an average 60,000 km per year.

The vehicle fleet in Maribor is also problematic from the environmental aspect, as 35 buses or 77.7 per cent are environmentally unsuitable (32 vehicles with EURO II engines and 3 vehicles with EURO III engines), while only 10 buses are environmentally suitable (8 buses with EURO V engines and 2 buses with EURO V EEV engines).

As at 31 December 2013, only 50 buses in Ljubljana met the EURO V standards and 20 buses met the EEV standard. The most problematic are 27 buses which do not even meet EURO 1; also, 68 buses barely meet EURO 2.

The existing vehicle fleet is also less passenger-friendly from the aspect of comfort, as 20 vehicles or 44 per cent of the fleet do not have air conditioning. Only 10 vehicles or approximately 22 per cent of the entire vehicle fleet meet all the criteria for transporting disabled persons.

In relation to the passenger-friendliness of buses, the situation in Ljubljana is slightly better, since old buses were also subsequently fitted with air-conditioning devices and ramps for

physically disabled persons. 182 buses in Ljubljana are low-floor buses, of which 181 have air-conditioning.

Considering the number of vehicles available, their age structure and structural characteristics (not all buses are low-floor buses and are not accessible for all population groups), and the fact that most vehicles have exceeded the number of kilometres travelled anticipated for the operating period, urban public passenger transport in Maribor does not realistically offer a quality alternative to private vehicles, so the vehicle fleet requires urgent renovation. The town needs new, comfortable, powerful, and environmentally and user-friendly vehicles, especially low-floor and low-emission vehicles.

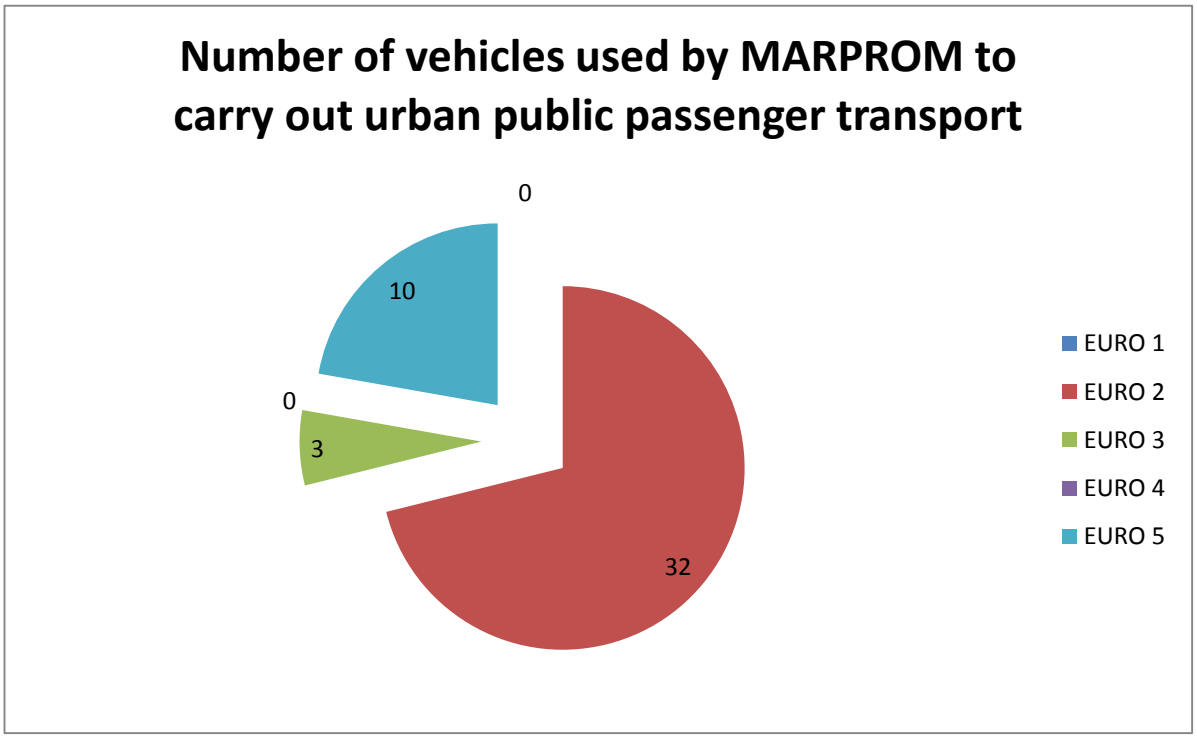


Figure 72 Number of vehicles used by MARPROM to carry out urban public passenger transport

Within the programme of long-term strategic modernisation of the vehicle fleet, MARPROM intends to modernise 10 per cent of its vehicle fleet annually between 2020 and 2030, which means that the age of 5 years would be achieved in 5 years of operations. At the same time, more vehicles would also raise the quality of urban public passenger transport, especially the frequency of service of urban passenger lines.

A similar conclusion may be drawn for Ljubljanski potniški promet. Fleet renovation is especially necessary due to its environmental unsuitability. Replacing all buses that do not meet at least EURO IV and V would lower PM_{10} emissions by over 20 tonnes annually.

It is planned in Ljubljana to increase the vehicle fleet by at least 300 vehicles by 2030. By 2020, the Municipality wishes to eliminate all buses from the vehicle fleet that do not meet the EURO IV and V standards. It is planned in Ljubljana to increase the vehicle fleet by at

least 8 vehicles by 2020. Later, replacements (10 per cent of the vehicle fleet annually) and additional purchases to increase the vehicle fleet are also planned.

3.10.3.3.3. Conclusion

Public passenger transport in Slovenia is carried out by buses and trains. Bus transport operates at the international, national and urban levels, while most trains operate at the international and national levels. Only about 8 per cent of trips in Slovenia are carried out by public passenger transport. One reason for the relatively low utilisation of public passenger transport is the relatively poor and uncompetitive level of the service. The main shortcomings of public passenger transport are as follows:

- the system does not have an operator to manage the system comprehensively from the aspect of passengers' needs, the optimal organisation of transport and financial flows in public passenger transport;
- uncoordinated timetables;
- no annual ticket for the use of various transport modes of various operators;
- travel time is uncompetitive compared to private vehicles;
- the frequency of services, especially rail services, is too low and not arranged according to the principle of a clock-face timetable;
- several transfer points, stations and stops do not provide safe and comfortable havens, sufficient information, comfortable and safe access and transfer, including Ljubljana bus and train stations;
- outdated vehicle fleet;
- disorderly PPT stations and stops;
- the P+R system has not been widely established;
- unsuitable PPT arrangement – rigid and not adjusted to the changed needs of various areas.

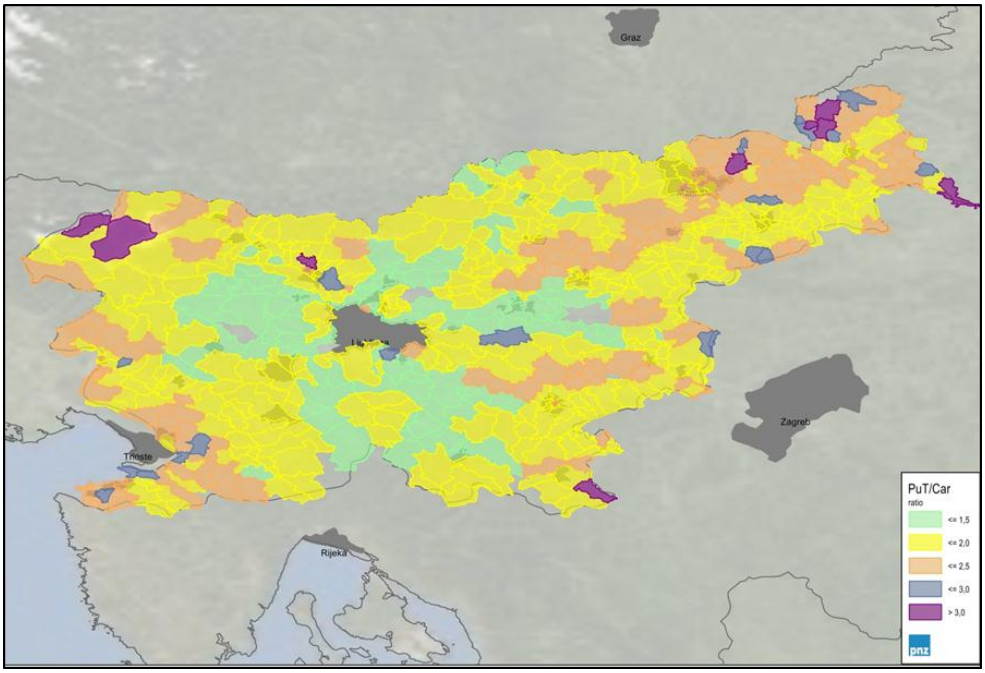


Figure 73 Access to Ljubljana showing ratio of travel times by public transport/car, 2011

Figure 74 shows that Ljubljana is best accessible by public transport from areas with railway lines and concentrations of bus lines (highlighted in green).

Desired state:

- Public passenger transport must be organised in accordance with the Sustainable Mobility Strategy.
- Public passenger transport should be competitive in order to reduce the need for, and dependency on, private vehicles.
- People without vehicles must be able to meet their travel needs (work, school, stores, culture) by public passenger transport in a comfortable manner and within an acceptable period, and at acceptable costs.
- The Spatial Planning Strategy of Slovenia provides the following guidelines:
    - (1) Public passenger transport at the national and local levels is being developed into a logistically integrated system. The entire PPT system is being developed as a combination of air, rail, road and maritime transport which emphasises public passenger rail transport in transport Corridors V and X.
    - (2) A system of passenger terminals is being developed and stops for various PPT systems are being logistically connected to achieve speedier development and high-quality transport services. In accordance with the development of settlements, regional centres are being developed into PPT transport hubs.
    - (3) Speedier PPT development improves access to centres of regional importance by public transport modes. PPT systems in urban areas must be efficiently connected into a PPT system of regional, national and international importance; therefore, settlements in wider four urban areas (note: the Spatial Planning Strategy of Slovenia specifies five wider urban areas: Ljubljana, Maribor, Celje, Coast and Nova Gorica) are connected in a peri-urban rail transport system.
    - (4) In co-dependency with the development of settlements, all forms of PPT are being preferentially developed into a so-called ‘train– bus’ transport system in connection with car parks and cycling routes in order to facilitate the ‘park and ride’ system. The development of public maritime PPT is being accelerated in the coastal area. Along with the improvement of integrated PPT, the development of non-motorised transport, such as cycling and walking, is being promoted in narrower urban and local areas,

Actual state:

- Due to the motorisation process and gradual reduction in the use of public transport, its offer gradually declined to the point where public transport ceased to be attractive or competitive with private vehicles.
- Since public passenger transport is not competitive with private vehicles, the number of public transport (bus and train) passengers has declined in the last decade threefold and public transport options have halved.
- Despite relatively good spatial coverage, the level of public passenger transport services is relatively poor and unattractive, especially due to unfavourable timetables, lengthy travel times and high costs, particularly of buses. In addition, transfers, stations and stops are poorly organised.

Finding:

- Public transport is not currently competitive with private vehicles, and its competitiveness is continuing to decline.

- Current public transport does not facilitate comfortable or time and cost-efficient transport.

Required measures:

Public passenger transport will have to be modernised and organised so that the advantages of rail are optimally utilised, making railways the primary carrier, and so that bus transport ensures suitable options in other areas. Therefore, the following measures must be realised:

- organise existing public passenger transport so that rail, which has comparable advantages, becomes the primary carrier; reorganise bus lines in rail corridors for them to supply passengers, while other buses continue to operate as independent lines;
- harmonise timetables and introduce a uniform ticket;
- introduce a clock-face rail timetable with acceptable frequency;
- implement sustainable mobility measures at the national and local levels by promoting pedestrian, bicycle and public passenger transport, and ensure conditions for P+R;
- in all larger towns introduce separate lanes for public passenger transport or yellow lanes;
- fit all transfer points, stations and stops with overhanging roofs; arrange platforms for people to comfortably board and alight from vehicles; arrange safe and comfortable access; introduce advanced information systems; construct Ljubljana bus and train stations;
- upgrade the vehicle fleet by taking into account environmental requirements;
- adjust the PPT system by introducing transfers at request to various areas where establishing regular lines would not be rational (remote, thinly populated areas, tourist areas, etc.);
- encourage municipalities to plan activity development from the aspect of PPT and sustainable mobility.

These measures will make public passenger transport more attractive and competitive, and enable a suitable level of service.

3.10.3.4. Bicycle traffic

Bicycle traffic is classified among the most suitable transport modes in terms of the environment and health. It is also the quickest transport modes for short distances (up to three kilometres). At the national level, the system of cycling routes may facilitate transfers to work, school, shops, etc. over short distances, and recreation and tourism development over long distances.

Primary national cycling routes must be arranged as special routes intended only for cyclists and separated from motorised transport. Secondary cycling routes must be separated with a black line along the right edge of the carriageway intended for motorised transport. On roads with less volume and lower speeds, bicycle traffic may also run along a mixed carriageway; Tthese are tertiary cycling routes.

Distances, topographic and weather conditions, and especially the arrangement of cycling routes and their connection with a complete system affect the quantity of bicycle traffic. The

disorganisation and disconnection of these routes is also a principal obstacle to the development of this type of transport.

Approximately 50 km of national cycling routes have been or are being constructed in Slovenia. Cycling routes spontaneously also run on surfaces with mixed traffic. However, in some places, the problem is the unadjusted speed of motorised transport.

Considering its purpose or function in transport, cycling connections throughout the entire cycling network in Slovenia may be divided into two basic groups:

1. **cycling connections which facilitate sustainable mobility and intermodality:** at the local level, the public passenger transport network and cycling connections interconnect peri-urban settlements and with towns, and promote the intermodality of the transport system. In co-dependency with the development of settlement, cycling is integrated into all forms of public passenger transport in the so-called 'train– bus' transport system in connection with car parks and cycling routes in order to facilitate the 'park and ride' system. Public passenger transport which gives priority to cyclists and pedestrians is particularly being supported and expanded, while car transport is being reduced and terminated on the fringes of central areas with organised parking.
   In towns and other settlements, a cycling network is also being constructed for daily commuting over short distances. The most important directions of private transport in urban areas should be fitted with cycle lanes, which should then be connected with public passenger transport stops and parking areas for motor vehicles;.
2. **national cycling network:** in accordance with the Spatial Planning Strategy of Slovenia, the development of a network of cycle lanes is planned in connection with an ecologically-oriented tourist offer, which will also enable the population to take healthy physical exercise.In accordance with this Strategy, the network of national cycling connection is being developed in connection with an ecologically-oriented tourist offer to enable the population to perform healthy physical exercises.
   The design of the national cycling network includes a network of national long-distance and main cycling connections which connect urban centres and tourist settlements, and are connected to the European long-distance cycling connections nos. 8 and 9 which run through Slovenia.

Networks of regional cycling connections are being developed towards long-distance and main road connections, and connected to European cycling connections.

The basic principles are as follows:

- short-distance transport in towns and suburbs, instead of using cars for distances shorter than 10 km where limitations and high parking costs are expected, i.e. in the sense of bicycle traffic as part of public transport;
- local trips in and around numerous smaller settlements in Slovenia, where topographic conditions permit;
- short 'aggregate' trips to railway or bus stations, where the combination with public passenger and rail transport is expected to become important in daily commuting from suburban and peri-urban areas ('*bike and ride*');
- recreational and tourist cycling in the surroundings and hinterland of larger settlements and in areas attractive to tourists (spas, wine roads, picturesque castles, villages), holiday and travel-related cycling or one-day rides with a return to the starting point;
- international tourist-oriented cycling and the connection of the national cycling network with the network of European cycle routes.

Desired state:

- Slovenia should have an arranged system of national cycling routes with the pertaining equipment.
- Cycling routes must be categorised into primary, secondary and tertiary routes with suitable arrangements.
- The speed of motor vehicles in mixed traffic areas should be limited to a maximum of 50 km/h, and 30 km/h in narrow and densely built-up areas.
- The Spatial Planning Strategy of Slovenia determines:
  - (1) The design of the cycling comprises a network of national long-distance and main cycling connections which connect urban centres and tourist settlements, and are connected to the long-distance European cycling connections nos. 8 and 9 which run through Slovenia.
  - (2) Considering spatial options and available road infrastructure, existing routes free of motorised transport or routes with less traffic should be used for cycling routes. New cycling routes should be arranged in areas without such options.
  - (3) Networks of regional cycling connections are being developed towards long-distance and main road connections, and connected to European cycling connections. In towns and other settlements, a cycling network is also being constructed for daily commuting over short distances. The most important directions of private transport in urban areas should be fitted with cycle lanes, which should then be connected with PPT stops and parking areas for motor vehicles.

Actual state:

- Slovenia does not have a document which categorises national cycling routes, and determines where and how they should be arranged.
- The table below shows that over 1,000 road accidents annually in Slovenia involve cyclists.

Table 25 Number and consequences of road accidents involving cyclists

Year	No. of road accidents	Consequences (injuries)			Total injuries (G + M)
		Fatalities	Serious physical bodily harm	Minor physical harm	
2009	1,202	18	175	909	1,084
2010	1,081	16	125	834	959
2011	1,314	14	147	965	1,112
2012	1,381	12	198	991	1,189
2013*	1,279	16	152	985	1,137
Comparison 13*/09	**6%**	**-11%**	**-13%**	**8%**	**5%**
Comparison 13*/12	**-7%**	**33%**	**-23%**	**-1%**	**-4%**

*temporary data

Finding:

- No document regulates national cycling routes.
- The system of national cycling routes has not been competed, due to which cycle traffic cannot properly develop.
- Cycling on roads where the same surface is used by cyclists and motorised transport is dangerous and unattractive.

Proposed measures:

Bicycle traffic must be suitably developed. Therefore:

- a strategic plan to arrange cycling connections at the levels of the state, functional regions and towns should be prepared and implemented;
- traffic calming measures should be carried out on roads for mixed traffic to make cycling safer, especially in narrow, densely built-up and dangerous areas;
- a regulation on the categorisation of cycling connections and a regulation on the designing of cycling connections should be prepared;
- spatial and transport planning at the national, regional and local levels should be harmonised according to existing needs to support future development.

The priorities in developing the cycling network in the Republic of Slovenia are as follows:

1. cycling connections which facilitate sustainable mobility and intermodality:

- improve urban and peri-urban cycling connections with public bus and train transport, and influence the change in mode choice in favour of cycling in towns and peri-urban areas; establish the *park and ride* system by constructing car parks on the edges of settlements and enhancing public passenger transport, including the use of public bicycles, etc.;
- ensure suitable traffic safety for cyclists;
- reduce negative impacts on the environment.

2. national cycling network:

- provide a connection with the international cycling network;
- ensure state connections through cycling connections;
- ensure suitable traffic safety for cyclists;
- take into account a market-oriented approach and the significance of tourism.

3.10.3.5. Port of Koper

The port of Koper is among the most important north Adriatic ports, and has the status of an entry point for goods destined for the EU. In addition to Slovenia, the port also supplies Austria, Italy, Hungary, the Czech Republic, Slovakia, Bavaria, Poland and countries of the former Yugoslavia. The volume of transhipment at the port is constantly increasing.

In 2012, 17.9 million tonnes were transhipped (or 5 per cent more than in 2011), 571,000 TEU of container transport and 480,000 cars.

In 2012, the port of Koper focused on maintaining its position in traditional markets, and also utilised new opportunities and increased its share in other markets. In the transhipment structure, the highest shares in 2012 were taken by the domestic market (29 per cent), the Austrian market (27 per cent) and the Italian market (14 per cent). The port's objective is to achieve transport growth of over 19 million tonnes by 2015 and over 23.5 million tonnes by 2020. In 2030, over 30 million tonnes of transhipment is expected[25].

Due to falling prices of shipping, ships are becoming larger, but the port has not yet adjusted to this:the problems are ship channels and pools which are too shallow, and short piers.

Increasing transhipment requires the prompt provision of suitable additional port infrastructure and better capacity of hinterland connections, especially rail, which is a

[25] Report on the scope of transhipment and development of the port of Koper, Luka Koper, 2013

bottleneck and a threat to the development of the port. The Koper–Divača and Divača–Ljubljana lines, the Ljubljana hub, and the Ljubljana–Jesenice and Zidani Most–Šentilj/Hodoš lines pose the most problems.

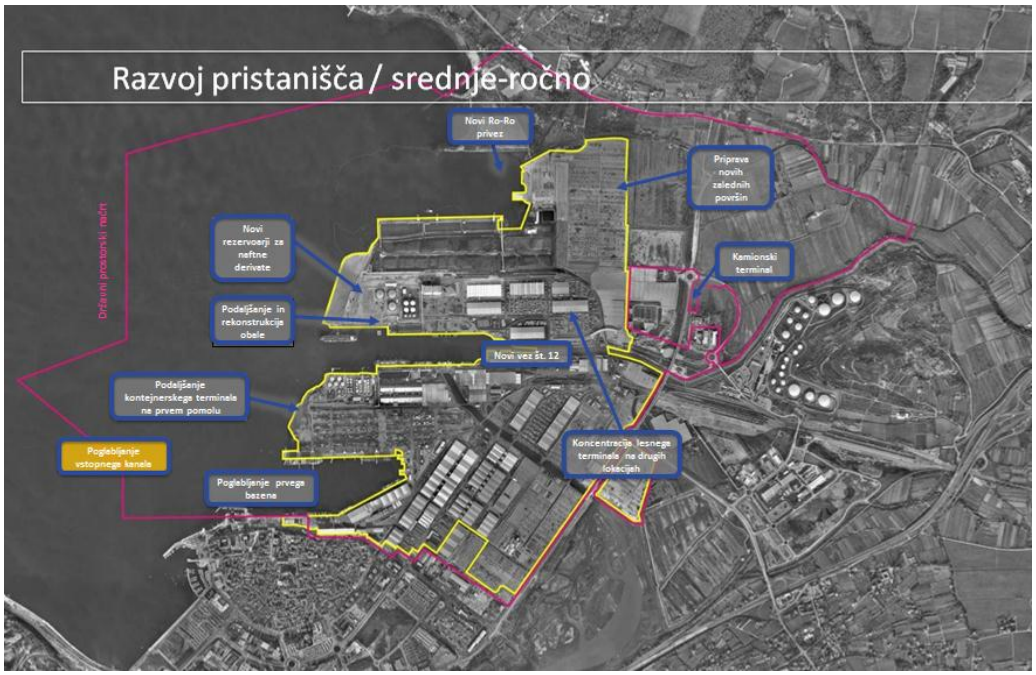


Figure 74 Port development by 2020 (in the medium term)

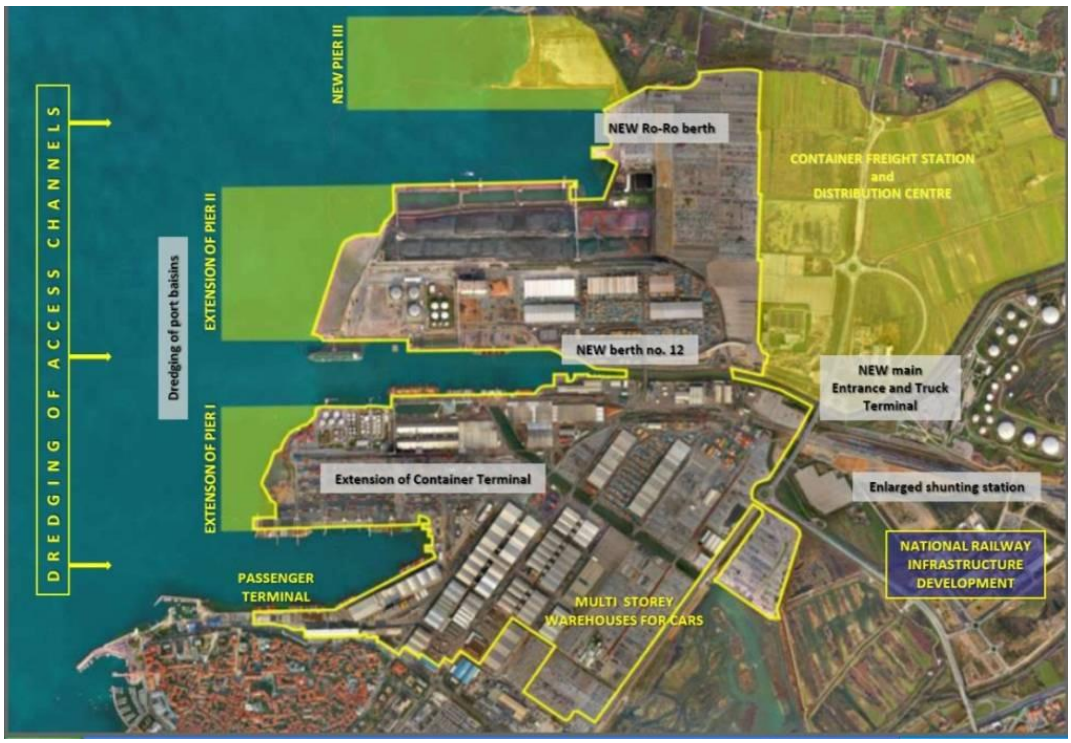


Figure 75 Main projects at the port of Koper NSP

Figure 75 shows the length of piers and other required arrangements to facilitate the port's development.

Desired state:

- uninterrupted entry of large ships directly into the port of Koper;
- sufficient capacity of port infrastructure;
- sufficient capacity and quality of hinterland railway connections;
- the Spatial Planning Strategy of Slovenia states that the port should be developed as a priority, and in connection with other north Adriatic ports and the hinterland or European transport Corridors V and X. To improve transport connections between towns in Slovenian Istria and other places in the northern Adriatic region, intercontinental maritime passenger transport should be planned, and maritime passenger transport should be promoted in Koper.

Actual state:

- currently, larger ships cannot dock at the port of Koper;
- existing port infrastructure does not facilitate the reception of large volumes of cargo;
- the current capacity and quality of railway connections do not facilitate the port's development.

Finding:

- unsuitable dimensions of ship channels, pools and piers, unsuitable existing port infrastructure, and the bottlenecks of the Slovenian railway network threaten and hinder the development of the port of Koper.

Proposed measures:

The development of the port of Koper will be facilitated through the following measures:

- deepening of other ship channels and pools (in addition to those currently being deepened), extension and construction of piers, and rearrangement of other port infrastructure;
- rearrangement of the railway network to facilitate the reception of expected cargos and delivery within an acceptable period;
- arrangement of a suitable road connection between the motorway network (expressway) and the entrance to the port, and arrangement of the road network in the Koper area.

Measures to facilitate an increase in transhipment from 18 million to 35–40 million tonnes are divided into three phases:

1. **Phase 1 – by 2015:** anticipated deepening of the ship channel into Pool 1 and deepening of Pool 1 for the container terminal. In August 2014, the deepening from the current 11.5 m to 14 m was carried out, and further deepening by 1 m to 15 m depth is anticipated by the end of 2015. The deepening will also facilitate the entry of large ships with a capacity of 8,500 TEU (currently, only the entry of ships with the load-bearding capacity up to 6,500 TEU is possible).
2. **Phase 2 – by 2020 (medium term):** investments will include existing infrastructure. An important activity by 2020 is the deepening of the ship channel into Pool II, the extension of Pier I, and the acquisition of containers in the rear area.
3. **Phase 3 – after 2020 (long term):** two major investment projects will be carried out: the extension of Pier II and the construction of Pier III.

Table 26 Medium-term terminal priorities

Capacity	By 2015	By 2020
Containers	Extension of rear areas (dilatations)	Expansion of the terminal into the rear area
	Enhancement of track capacity	
	Arrangement of the access and exit point to the terminal	
General cargo	Warehouse of conditioned goods, overhanging roofs	Warehouse for iron products
		Relocation of overhanging roofs for wood from the rear area of Pier I
Coal and iron ore	Reinforcement of the existing landfill	Carriage loading station with pertaining equipment
	Commencement of the project of a new carriage loading station	
	Expansion of the iron ore landfill	
Liquid cargo	Reconstruction of reservoirs on Pier II for flammable liquids	
	Construction of a new reservoir on Pier II	
	Jet reservoirs	
Bulk cargo	Overhanging roofs	Soya bean warehouse on Pier II
	Ecological restoration	
Cars	Arrangement of additional surfaces	Multi-storey car park
Passengers	Basic arrangement of the terminal	Terminal facility

Source: Report of Luka Koper d. d., January 2014

Table 27 Port infrastructure designated for public transport

Capacity	By 2015	By 2020
Shore, piers, pools	Extension of Pier I on the southern side	Extension of shore on the northern side of Pier I
	12th berth	Deepening of Pool III
	RORO berths in Pool III	Extension of shore of Pier II
	Berth 8c for cattle	Commencement of arrangement of Pier III
	13th berth – shore for a silo	Deepening of Pool II
	Deepening of pools and maintenance of depths	
Other – inside the port	Additional tracks	New entrance and truck terminal
	Expansion of the existing entrance to the port	Southern artery on the western side which connects the main entrance to Pier I
Other – outside the port	Acquisition/arrangement of containers 6A, 7A and 799/29	Road connection to the new entrance and truck terminal
	Deepening of the ship channel into Pool I	Deepening of the ship channel into Pool II
Capacity	**2014–2020**	
Pier I	Extension of Pier I	
	Container at the beginning of Pier I	
	Railway track on Pier I	
Pier II	Construction of the 12th berth and related deepening	
	Construction of berth 8c and related deepening	
	Extension and reconstruction of the silo shore (13th berth)	
	Closure and construction of a container at the beginning of Pier II	
	Extension of shore of Pier II	
	Construction of a berth at the beginning of Pier II	
	Railway tracks and other track infrastructure on Pier II	
	Deepening of Pool II	
Pier III	Arrangement of temporary berths in a multi-purpose area	
	Commencement of construction of Pier III – 27th and 28th berth for RORO and deepening	
Rear areas	Arrangement of containers 6A and other new surfaces (799/29 and 7A in 2013)/habitats	
Connecting infrastructure	New entrance, truck terminal, primary port infrastructure, viaduct, relocation of the artery	
	Railway connection	

Source: Report of Luka Koper d. d., January 2014, and data of the Infrastructure Directorate at the Ministry of Infrastructure

3.10.3.6. Airports

Ljubljana Jože Pučnik Airport

The Ljubljana Jože Pučnik Airport is the central Slovenian airport; the number of passengers transported stagnated in recent years, but it began to grow in 2013. Growth is also expected in the long term, particularly due to its favourable strategic location.

In 2013, 1.3 million passengers were transported, and 2.3 million passengers are expected to be transported in 2030. Also expected is a change in the transport structure, i.e. growth of the share of foreign and low-cost carriers. Cargo transport is also expected to grow;in 2013, 17,800 tonnes were transported, and 27,800 are expected to be transported in 2030.[26]

Desired state:

- The uninterrupted operation of the airport at present and in the future requires more space for passengers and cargo, manoeuvring areas, an apron, an access system, parking areas, relocation of the main road, enhancement of sustainable access to the airport from centres of national importance, etc. The expansion of activity requires the construction of the Aeropolis business and logistics centre, etc.
- The Spatial Planning Strategy of Slovenia determines that the design of international airports/heliports for the needs of international air transport at the national level be preserved and the current three public airports/heliports for international air transport be developed.

Actual state:

- The area for handling passengers and cargo is already too small and a bottleneck during peak hours. Hangar capacity and, partly, manoeuvring areas also present a problem. Other measures are not currently urgent, but will be necessary for the development of the airport.

Finding:

- The greatest problem is the airport's bottleneck, i.e. in terms of the capacity of the unsuitable passenger and cargo terminals. Other problems will occur if the development of air transport is intensive. Therefore, we would like to improve the service.

[26] Contribution to the Resolution on the National Programme for the Development of Transport Infrastructure in the Republic of Slovenia, Aeroinženiring, January 2014

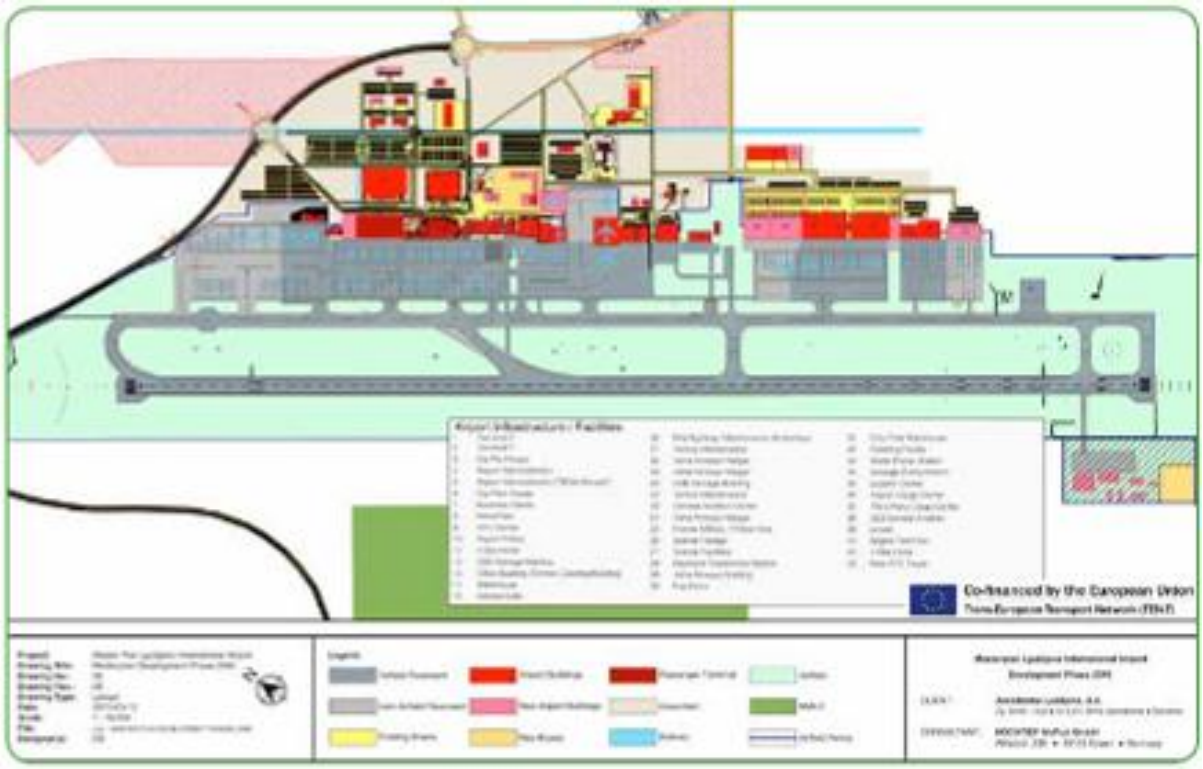


Figure 76 Proposed reorganisation of the Ljubljana Jože Pučnik Airport (2040)

Proposed measures:

- new passenger and cargo terminals, increase in hangar capacity and other urgent arrangements (a more detailed description is given below);
- better PPT connections with centres.

Projects between 2014 and 2020:

- new passenger terminal: the new terminal will be connected with the existing terminal on the first floor, since part of the existing terminal will still serve transport needs, i.e. as a waiting area for passengers in international transport. The capacity of the new terminal will be 1,800 passengers incoming and outgoing per hour. The new terminal will ensure 'C' level services according to IATA standards. Thus the conditions for attaining the strategic objectives of the airport, and further growth in passenger air transport will be realised.
- relocation of the main road: on the one hand, the relocation of the road will facilitate the arrangement of access and stationary traffic in front of the passenger terminal, as well as separate access to the cargo terminal, while on the other, it will facilitate the development of facilities within the Aeropolis business and logistics centre;
- new cargo terminal: the new cargo terminal will encompass 9,945 m^2 of warehouses, and 3,500 m^2 of office and accompanying areas. A 9-metre-wide overhanging roof will be constructed in the direction of the apron, while a three-storey business building is anticipated on the northern side of the facility. The warehouses will be at a height of 1.1 m above the height of the access for trucks, and at the height of the platform for aircraft servicing on the airport side. Access to the area is anticipated from the northern side through the eastern roundabout on the relocated G2–104 Kranj–Brnik main road. 174 parking spaces for the private vehicles of employees and visitors are anticipated on the platform in front of the terminal. The platform for trucks facilitates

the manipulation of goods vehicles and access to 22 doors with lift tables. The anticipated capacity of the warehouse is 40,000 tonnes/year;
- energy (reconstruction of facilities, alternative sources);
- business and logistics area, which is divided into three sections, i.e.: hotel and congress centres, business and shopping centre and a business park, logistics.

Projects between 2021 and 2030:
- reconstruction of the existing passenger terminal;
- expansion of the apron;
- construction of a buffer zone;
- construction of a hangar for aircraft maintenance;
- construction of a facility for aircraft servicing;
- railway connection with Ljubljana;
- Aeropolis – construction in phases.

Projects after 2030:
- construction of the runway and other manoeuvring areas;
- expansion of the new passenger terminal;
- second phase of the new cargo terminal;
- expansion of aprons.

Maribor Edvard Rusjan Airport

The Maribor Edvard Rusjan Airport is the second largest airport in Slovenia. It is located on the northern edge of the Drava–Ptuj Plain in the municipality of Hoče–Slivnica. Located in the immediate vicinity of the airport is the town of Maribor, the second largest town in Slovenia according to population.

In 2013, passenger transport began to grow again, especially on account of special air transport during the summer holidays when over 13,000 passengers were transported. Transport growth is also expected in the future.

Desired state:
- The uninterrupted operation of the airport at present and in the future requires more space for cargo, manoeuvring areas, an apron, an access system, parking areas, hangars for aircraft maintenance and storage, etc.
- The Spatial Planning Strategy of Slovenia determines that the design of international airports/heliports for the needs of international air transport at the national level be preserved and the current three public airports/heliports for international air transport be developed.

Actual state:
- The area for handling passengers currently corresponds to the expected scope, while the area for handling cargo is a bottleneck. Hangar capacity and, partly, manoeuvring areas also present a problem. Other measures are not currently urgent, but will be necessary for the development of the airport.

Finding:
- The greatest problem is the bottleneck, i.e. the cargo terminal. Other problems will occur if the development of air transport is intensive. Therefore, we would like to improve the service.

The following will take place during the anticipated modernisation:

- preservation of the existing runway and planning of its extension towards the south-east to a length of 3,300 metres by additionally arranging hard shoulders;
- planning of a new cargo apron in the extension of the existing apron towards the north-west, parallel to the runway, with appertaining facilities for aircraft maintenance and storage in hangars;
- planning of a new service apron in the extension of the existing apron towards the south-west, parallel to the runway;
- heliport for air passenger transport and for the needs of various services (police, army, first aid, etc.);
- anticipation of an area for a multimodal logistics centre and accompanying activities or arrangements.

Portorož Airport[27]

The table below shows the number of flights and passengers at Portorož Airport between 2006 and 2013.

Table 28 Number of flights and passengers between 2006 and 2013

Year	2006	2007	2008	2009	2010	2011	2012	Summer 2013
Flights	5,775	6,907	6,912	14,219	10,678	13,958	17,845	11,355
Passengers	13,066	13,999	12,927	17,784	16,446	23,262	22,532	19,467

Source: Aerodrom Portorož, d.o.o.

For the development of Portorož Airport, paving of manoeuvring areas up to the edge of the planned area, and the arrangement of the strip and a buffer zone are planned. The newly paved area will be approximately 1,500 m long. The width of the strip will be at least 75 m each side of the centreline of the runway and the extension of the centreline along the length of the strip.

In addition to the manoeuvring areas, the following arrangements are planned in the area of the airport:

- expansion of the apron and the existing taxiway, construction of a new taxiway;
- construction of a heliport;
- arrangement of an access road to the technical complex and car park;
- construction of a parking area for cars and buses;
- reconstruction and expansion of the passenger terminal;
- reconstruction of existing hangars and construction of new hangars for aircraft storage;
- construction of technical facilities;
- construction of an extension to the transformer station;
- construction of an overhanging roof for equipment;
- modernisation and construction of municipal infrastructure and guardrails;
- installation of security systems; and
- water management arrangements.

Since there must be no facilities and arrangements which are not part of the airport in the area of the strip and the buffer zone at the end of the runway, the following are planned:

[27] Source: Presentation of Aerodrom Portorož, d.o.o., Sečovlje–Sicciole, September 2013

- relocation of approx. 890 m of the G2–111/0239 main road, including all facilities and arrangements required for the uninterrupted functioning of the road;
- relocation of the existing border inspection post; and
- relocation of about 430 m of the Ribila accumulation.

3.10.4. Environmental acceptability

3.10.4.1. Greenhouse gas emissions

Greenhouse gas emissions trigger climate change. The atmosphere is gradually warming;the United Nations report of 2007 states that greenhouse gas emissions (GHG) produced by humans have a key impact on global warming, especially CO_2 produced in the combustion of fossil fuels.

Transport, especially road and air transport, is among the main sources of these emissions. In contemporary society, mobility must be preserved and developed, as this is one of its key needs, and mobility must be sustainable, i.e. transport must not inflict any irreparable damage on the environment.

Transport in Slovenia produces a considerable amount of greenhouse gas emissions. In 2011, traffic on motorways, expressways and state roads produced 13,962 tonnes of carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) emissions per day.

If the transport arrangement remains the same, greenhouse gas emissions will grow to 18,277 tonnes per day by 2030 despite the expected technological improvements.

Desired state:

- The proposed Slovenian operational programme[28] for reducing greenhouse gas emissions determines: greenhouse gas emissions are expected to be reduced by 15 per cent by 2030 in comparison with 2008.

Actual state:

- If the transport arrangement remains the same, greenhouse gas emissions will have grown by 30 per cent by 2030.

Finding:

- Spontaneous development orientation will make the conditions regarding greenhouse gas emissions worse and is a move away from the recommendations in the White Paper.

[28] Operational Programme for Reducing Greenhouse Gas Emissions by 2020 with a vision by 2030, working material, Ministry of Agriculture and the Environment, 2014

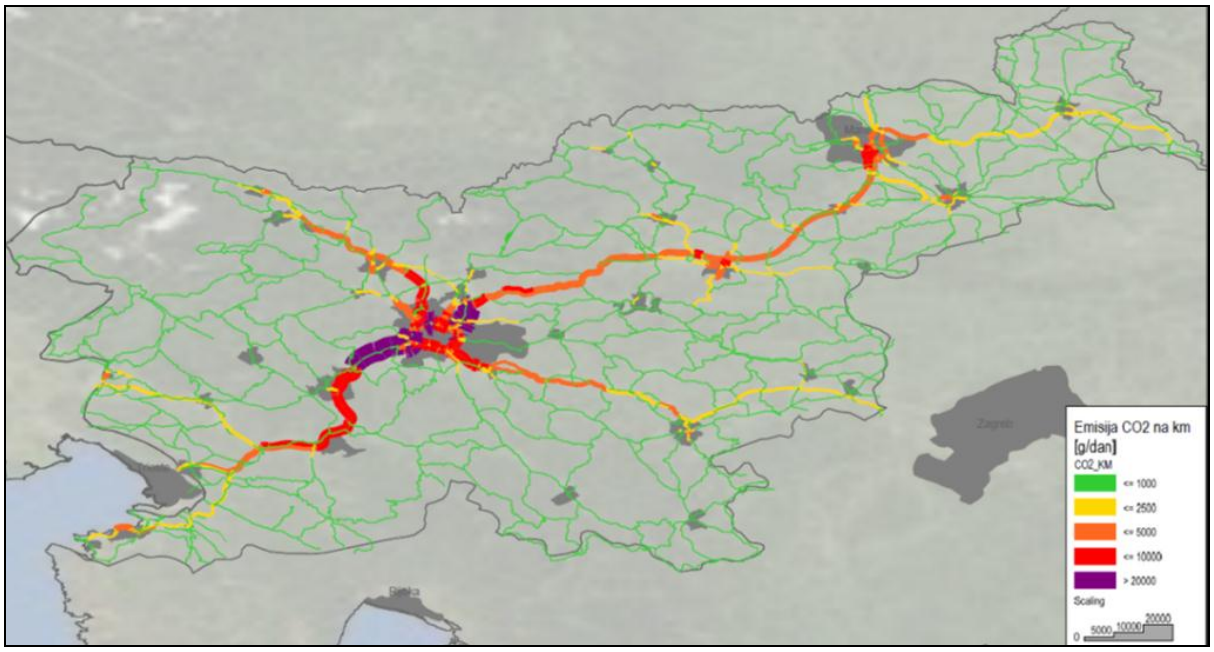


Figure 77 CO_2 emissions by 2030

Most CO_2 emissions are, and will be, produced along the motorway network, where traffic is, and will be, at its densest.

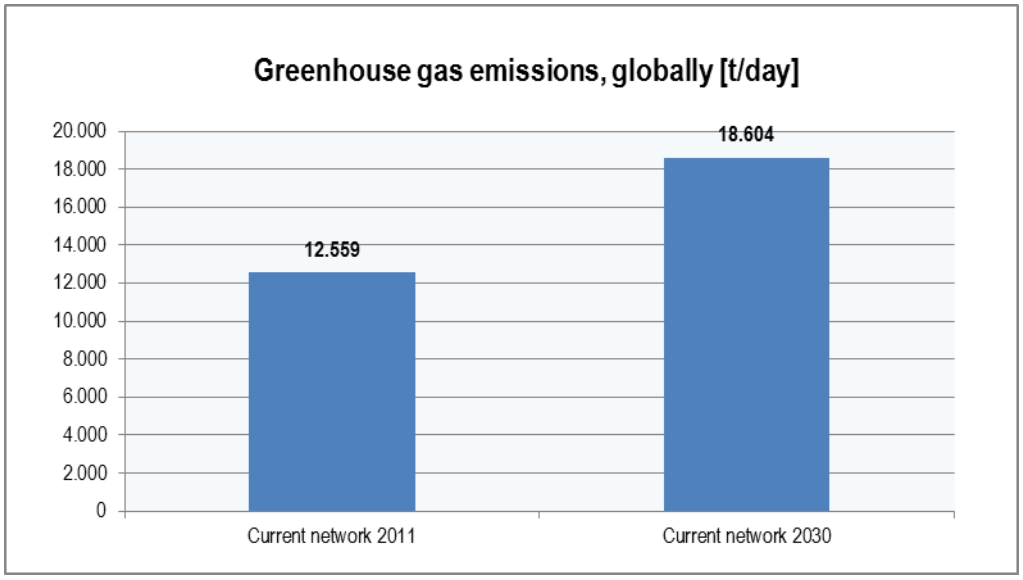


Figure 78 Greenhouse gas emissions in Slovenia

Proposed measures:

- introduction of efficient and competitive public, especially rail, passenger transport with the comprehensive integration of a P+R system at the national level;
- construction of a competitive railway network to assume more freight transport;
- promotion of alternative energy sources, and hybrid and electric vehicles;
- elimination of bottlenecks.

3.10.4.2. Climate change mitigation

The implementation of measures to attain the objectives of the Strategy must take into account the so-called indicative objectives to reduce greenhouse gas emissions, which are listed for individual sectors in the proposed Operational Programme for Reducing Greenhouse Gas Emissions by 2020 with a vision by 2030. Emissions have been rapidly growing in transport, in Slovenia faster than in other countries included in Annex I to the Kyoto Protocol. In addition, a lot of transit traffic which is only partially affected by measures in Slovenia may significantly affect the objectives.

The indicative objectives to reduce greenhouse gas emissions were prepared by individual sectors taking into account the legally binding objectives for the 2013–2020 period, political solutions adopted at the EU level regarding long-term objectives, the costs of reducing greenhouse gas emissions in Slovenia by 2030, and other general development, sectoral and environmental objectives, and in the formation of a vision, also by taking into account the effects of the technological solutions which are being developed. The indicative sectoral objectives to reduce greenhouse gas emissions for transport are as follows:

- the rapid growth in greenhouse gas emissions must be halted and reduced by 9 per cent by 2020 in comparison with 2008 by introducing sustainable mobility measures;
- the trend of growing greenhouse gas emissions produced by traffic must be reversed so that they do not grow by more than 18 per cent by 2030 in comparison with 2005, which is a 15 per cent reduction by 2030 in comparison with 2008;
- a vision of further emission reduction by 90 per cent by 2050 must be integrated into measures for attaining the objectives of the Strategy.

3.10.4.3. Climate change adaptation

In 2013, the Commission issued the EU Strategy on adaptation to climate change (COM(2013) 216 final). The general objective of the EU Adaptation Strategy is to contribute to a more climate-resilient Europe. This means enhancing the preparedness and capacity to respond to the effects of climate change at the local, regional, national and EU levels, developing a coherent approach and improving coordination.

The EU Adaptation Strategy states that climate change adaptation has already been mainstreamed in EU transport legislation, i.e. in the provisions of Regulation (EU) no. 1315/2013 on Union guidelines for the development of the trans-European transport network.

The provision of Article 5 of Regulation (EU) no. 1315/2013 requires Member States to plan, develop and operate the trans-European transport network in a resource-efficient way by:

- optimising infrastructure integration and interconnection;

- deploying new technologies and intelligent transport systems;
- improving and maintaining existing transport infrastructure;
- taking into account of possible energies with other networks, particularly trans-European energy and/or telecommunication networks;
- assessing strategic environmental impacts, with the establishment of appropriate plans and programmes, and of impacts on mitigating the effects of climate change;
- measures to plan and expand infrastructure capacity where necessary;
- adequate consideration of the sensitivity of transport infrastructure to climate change, and to natural or anthropogenic disasters.

Article 41 of Regulation (EU) no. 1315/2013 defines in more detail what is deemed appropriate in handling the sensitivity of transport infrastructure to climate change. The provisions of this Article require Member States to take into account, when planning infrastructure measures, risk assessment and adaptations which suitably enhance resilience to climate change, especially in relation to precipitation, storms, high temperatures and heat waves, drought, rising sea levels and storm surges. Pursuant to Article 41 of this Regulation, an analysis of the sensitivity of transport infrastructure to climate change must be prepared for all measures in the Strategy, and based on its results, measures and adaptations which suitably enhance resilience to climate change must be carried out.

3.10.4.4. Atmospheric pollutant emissions

Traffic also produces atmospheric pollutant emissions, which have a wide range of harmful effects on the environment and health: particles (PM_{10}, $PM_{2,5}$), nitrogen oxides (NO_x), sulphur dioxide (SO_2), carbon monoxide (CO), volatile organic compounds (VOC), polycyclic aromatic hydrocarbons (PAH), etc.

Air pollution is the main environment-related cause of premature death in the EU, as pollution accounts for ten times more deaths than road accidents. According to the OECD data, urban air pollution is set to become the primary environmental cause of mortality worldwide by 2050, ahead of polluted water and poor sanitation.

A major problem in Slovenia is the excessive concentration of PM_{10} particles and ground-level ozone (O_3) in ambient air.

Ground-level ozone (O_3) is produced by photo-chemical reactions between ozone precursors: nitrogen oxides (NO_x), non-methane volatile organic compounds (NMVOC), methane (CH_4) and carbon monoxide (CO). Anthropogenic emissions, especially from transport and industry, contribute the most to ozone precursor emissions.

Particles (PM_{10}, $PM_{2,5}$) are classified according to source:

- primary particles (the result of direct emissions of dust into the air, e.g. from vehicle exhaust systems during the combustion of diesel fuel), and
- secondary particles:
    - which are the result of chemical reactions between precursors of secondary particles: nitrogen oxides (NO_x), sulphur dioxide (SO_2), ammonia (NH_3) and non-methane volatile organic compounds (NMVOC);

- secondary particles are also particles deposited on surfaces and resuspended in the air, e.g. as a consequence of traffic or wind (resuspension of particles).

The combustion of diesel fuel is a major source of particles from transport. Most particles from the exhaust of diesel-powered vehicles is categorised as $PM_{2,5}$ (particles smaller than 2.5 micrometre, which are a subset of PM_{10} particles). Carcinogenic and mutagenic substances (polycyclic aromatic hydrocarbons (PAH)) are also adsorbed on particles from the exhaust of diesel-powered vehicles. Polycyclic aromatic hydrocarbons (PAH) are emitted by being adsorbed on particles or in a gaseous state. Diesel-powered vehicles are also important sources of nitrogen oxides (NO_x) (exhaust is must greater than from vehicles with petrol engines) which are precursors of secondary PM_{10} particles and ground-level ozone (O_3).
Several consecutive generations of EURO and fuel quality standards have been arranged to control emissions. In accordance with the requirements, emissions declined slightly, with one exception, i.e NO_x emissions from light vehicles with diesel engines. In real circumstances, NO_x emissions from EURO 5 cars type-approved in 2009 now exceed emissions from EURO 1 cars type-approved in 2005 and emit approximately five times the limit. This has a significant impact on NO_2, ozone and secondary particle concentrations around Europe.

In 2011, traffic on motorways, expressways and state roads in Slovenia produced 79.77 tonnes of emissions per day.

Due to technological improvements, emissions of these gases are expected to decline by 2020 to 22.12 tonnes per day.

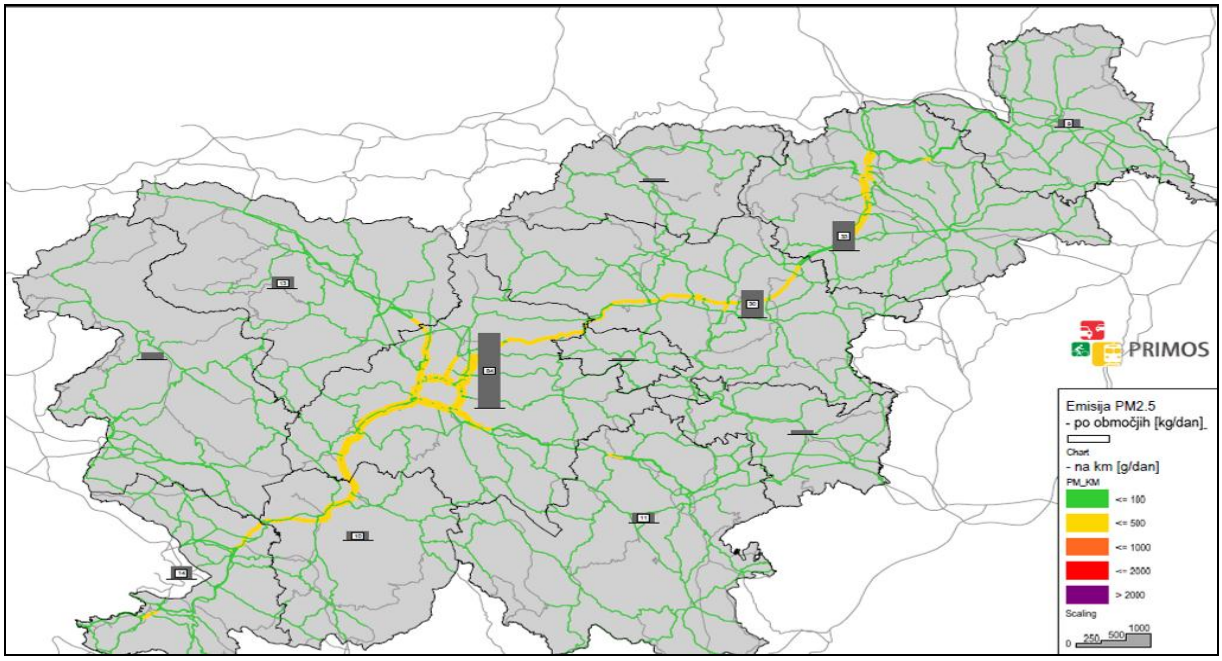


Figure 79 Emissions of $PM_{2,5}$ particles in Slovenia by 2030 in transport

$PM_{2,5}$ particle emissions are also highest in areas with most traffic.

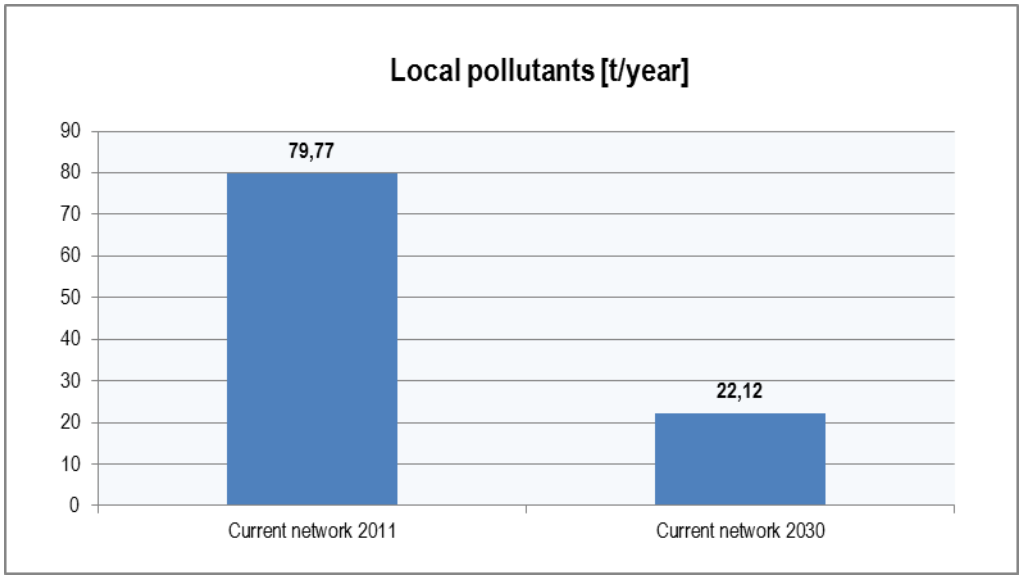


Figure 80 Emissions of local pollutants in Slovenia

Table 29 shows data by types of pollutant.

Table 29 Emissions of ambient air pollutants (t/year)

Type of gas	2011 (current network)	2030 (current network)
NO_x	7,576	4,363
SO_2	13	18
$PM_{2,5}$	212	50
NMVOC	810	209
Total	**8,611**	**4,640**

Desired state:

- reduce atmospheric pollutant emissions to the point where compliance with the prescribed ceilings of air quality regarding PM_{10} particles and ozone (O_3) are achieved in Slovenia (meeting air quality standards determined in the Decree on ambient air quality (Official Gazette of the Republic of Slovenia, no. 9/11) and Directive 2008/50/EC on ambient air quality);
- reduce atmospheric pollutant emissions to the point where national emission ceilings for SO_2, NOx, VOC, NH_3, $PM_{2,5}$ are achieved (national ceilings of pollutant emissions which had to be achieved by 2010 and must not be exceeded in the future are determined in the Decree on national emission ceilings for atmospheric pollutants (Official Gazette of the Republic of Slovenia, nos. 24/05, 92/07 and 10/14) and Directive 2001/81/EC (NEC Directive)). The NEC Directive is being audited, which will set new national emission ceilings for atmospheric pollutant emissions for 2020 and 2030. In 2012, a revised Gothenburg Protocol was adopted, which determines that Slovenia must reduce emissions in comparison with emissions in 2005 by no later than 2020);
- the taking into account of the guidelines from Commission communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions regarding the Clean Air for Europe Programme.

Actual state:

- Technological improvements will support the gradual reduction of atmospheric pollutant emissions from new vehicles.

Finding:

- Despite lower atmospheric pollutant emissions from new vehicles, traffic will remain a major source of ambient air pollution. Additional measures in transport will be required to achieve compliance with air quality limit values and national emission ceilings for atmospheric pollutants.

Proposed measures

- introduction of efficient and competitive public, especially rail, passenger transport with the comprehensive integration of a P+R system at the national level;
- construction of a competitive railway network to assume more freight transport;
- promotion of the use of public transport, walking and cycling, and of alternative energy sources, and hybrid and electric vehicles;
- limitation of the speed of vehicles on motorways, expressways and regional roads to 80 km/h in areas where PM_{10} ceilings are exceeded and at times when PM_{10} ceilings are exceeded;
- implementation of sustainable mobility measures in towns.

3.10.4.5. Noise impact

Noise is one of the main problems of our civilisation, as it has a negative effect on human health. It is particularly produced by road, rail and air transport, and industry. The main source of noise in Slovenia is road transport.

In 2011, approximately 80,000 residents in Slovenia were affected by excessive noise produced by traffic on motorways, expressways and state roads, and the railways as expressed in $L_{den.}$

If the transport arrangement remains the same, approximately 100,000 residents (this number does not include noise protection) will be affected by excessive noise produced by traffic on the aforementioned traffic routes in 2030.

Desired state:

- Nobody should be affected by average noise (L_{den}) higher than 65 dB.

Actual state:

- Currently, 80,000 residents are affected by excessive noise produced by traffic on motorways, expressways and state roads, and on the railways, which is set to grow to 100,000 in 2030 if the transport arrangement remains the same. 82 per cent of residents are affected by road transport and 18 per cent by rail transport (noise protection is not taken into account).

Finding:

- Excessive noise is a national problem, since at the current rate it will affect approximately 100,000 residents by 2030. In reality, even more residents are affected

by excessive noise, as the calculation does not take into account the impact of local roads.

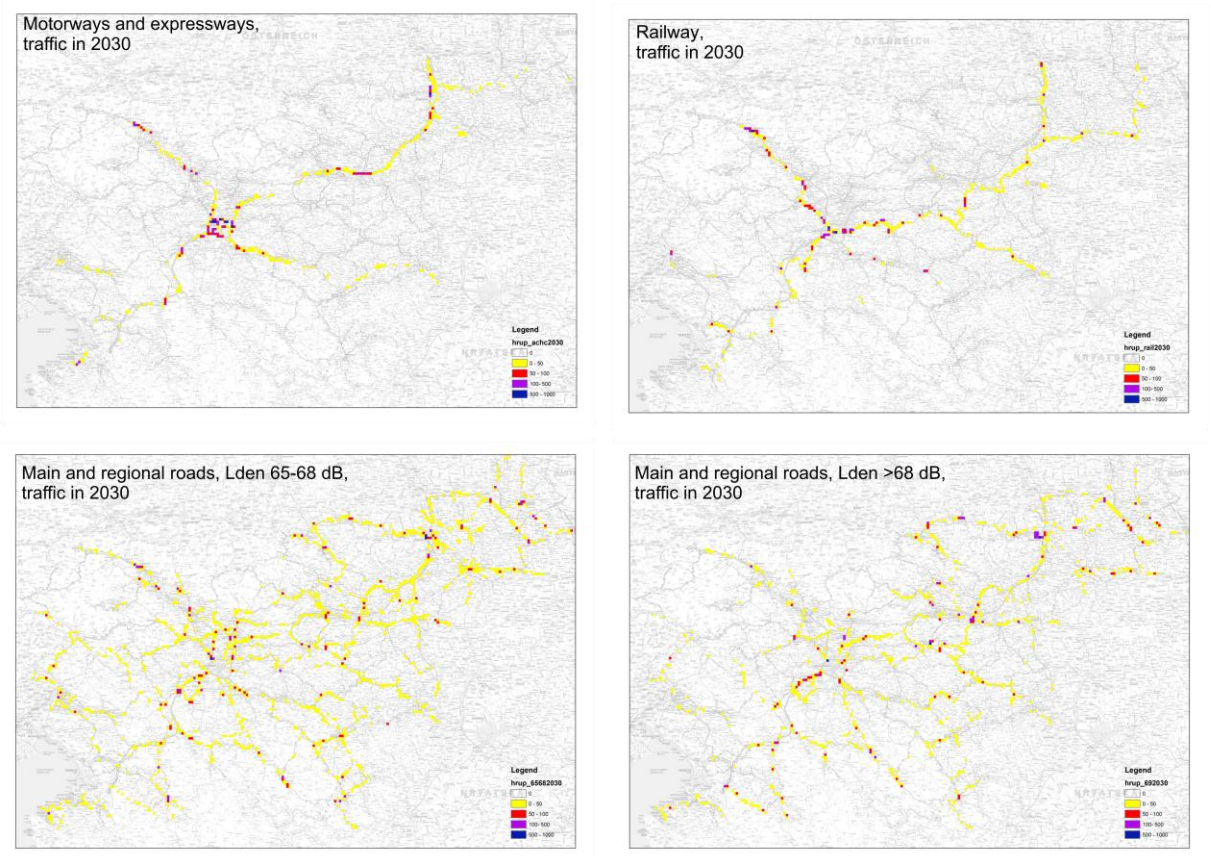


Figure 81 Residents affected by excessive noise produced by road and rail transport

Proposed measures:

- implementation of active and passive noise protection;
- use of silent asphalt (rubber, drainage);
- construction of bypasses (due to excessive noise from state roads) and limitation of speed in settlements;
- introduction of electronic toll collection and thus more efficient transport management;
- promotion of the use of hybrid and electric vehicles;
- planning of transport systems so that (depending on the type of infrastructure) they affect as few residents as possible (so that as few active noise protection measures as possible are required).

3.10.5. Social acceptability

3.10.5.1. Accessibility

In addition to traffic safety indicators, social acceptability is also expressed by social cohesion.

Social cohesion is established on the basis of an analysis of the cohesion centres' (Ljubljana and Maribor) accessibility by private vehicles and public passenger transport (railway and

buses);the ratio between these indicates the differences in options for people who own private vehicles and those who do not.

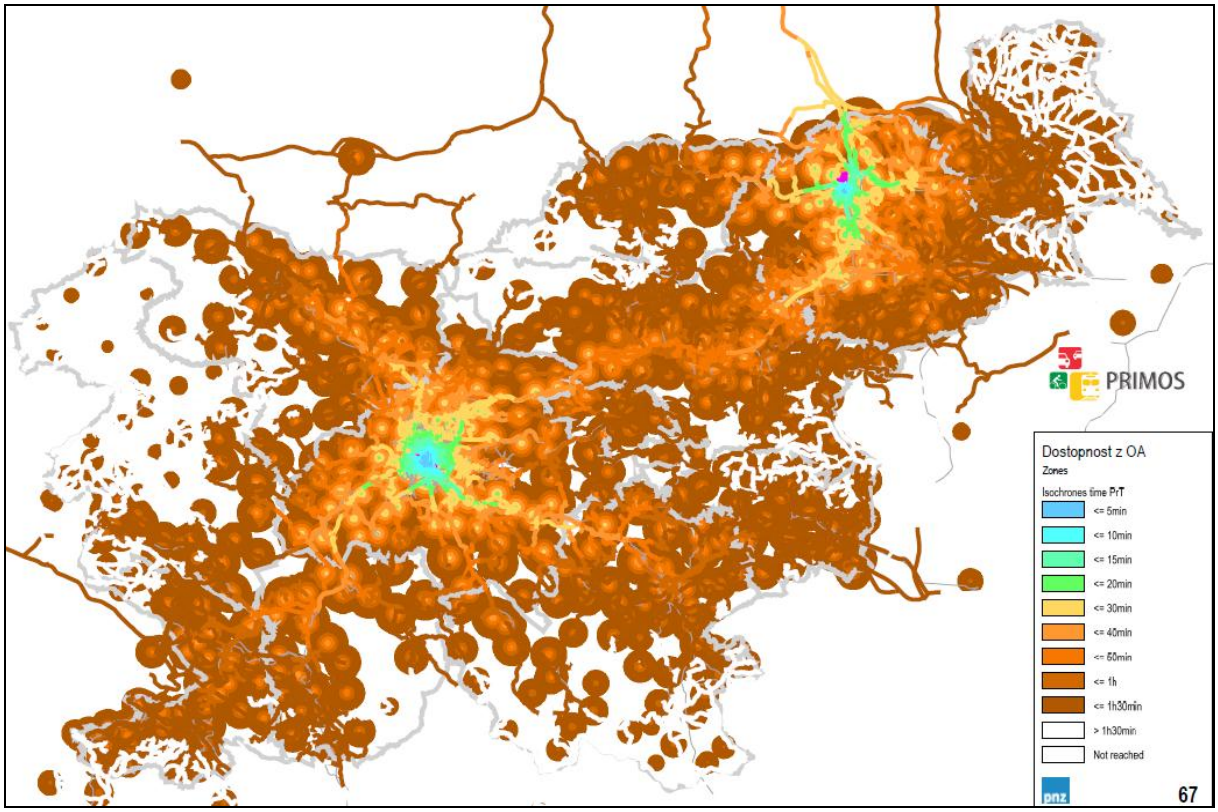


Figure 82 Accessibility of cohesion centres by car (in minutes)

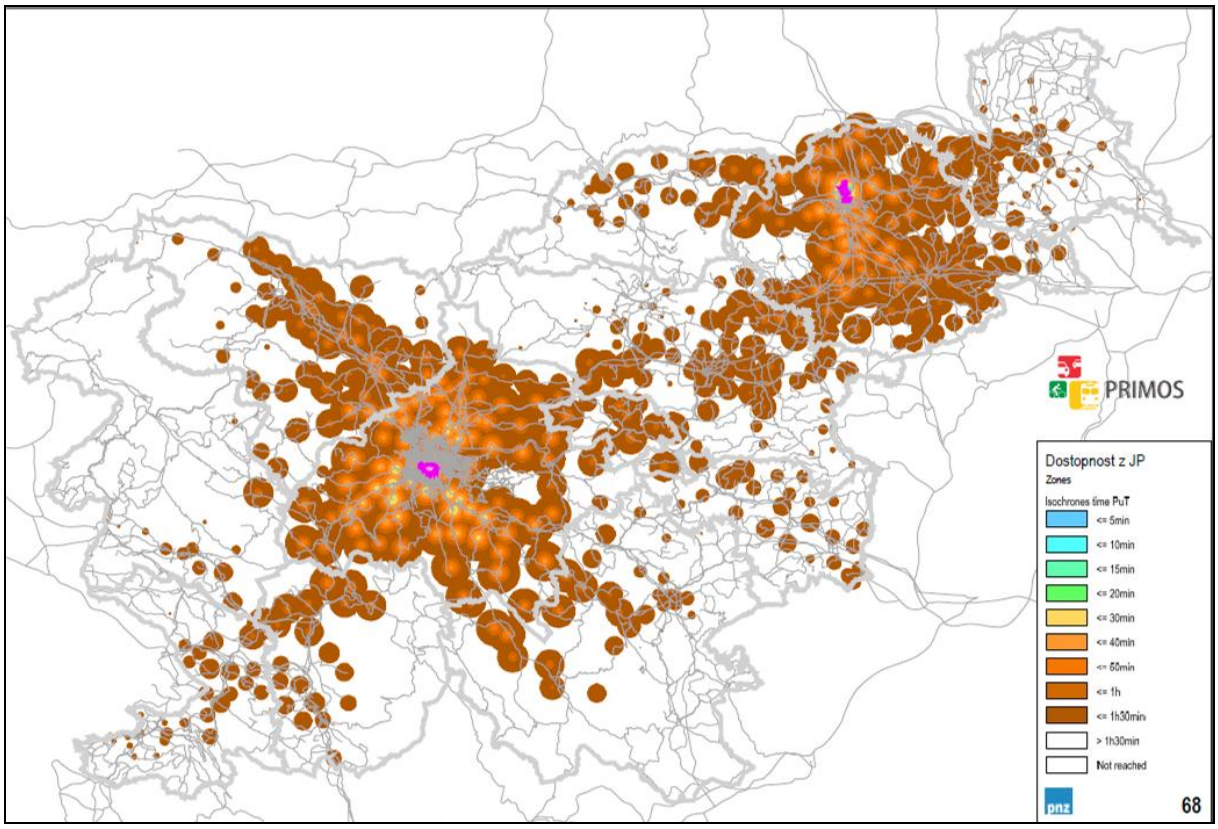


Figure 83 Accessibility of cohesion centres by public passenger transport (in minutes)

Figures 82 and 83 show that Ljubljana and Maribor are best accessible from areas with the most transport infrastructure and densely built-up areas. They also show that both towns are accessible in 1.5 hours by private vehicles from areas that are twice as wide as areas accessible by pubic passenger transport.

Table 30 Current accessibility of regional cohesion centres in half an hour by private vehicles and public passenger transport (number of residents)

Centre	2008		2030	
	Private vehicle	Public passenger transport	Private vehicle	Public passenger transport
Ljubljana	387,516	326,316	329,573	301,943
Maribor	273,933	136,015	228,864	123,363
Total	**661,459**	**464,331**	**558,437**	**425,309**
PT/PC ratio	**0.702**		**0.762**	

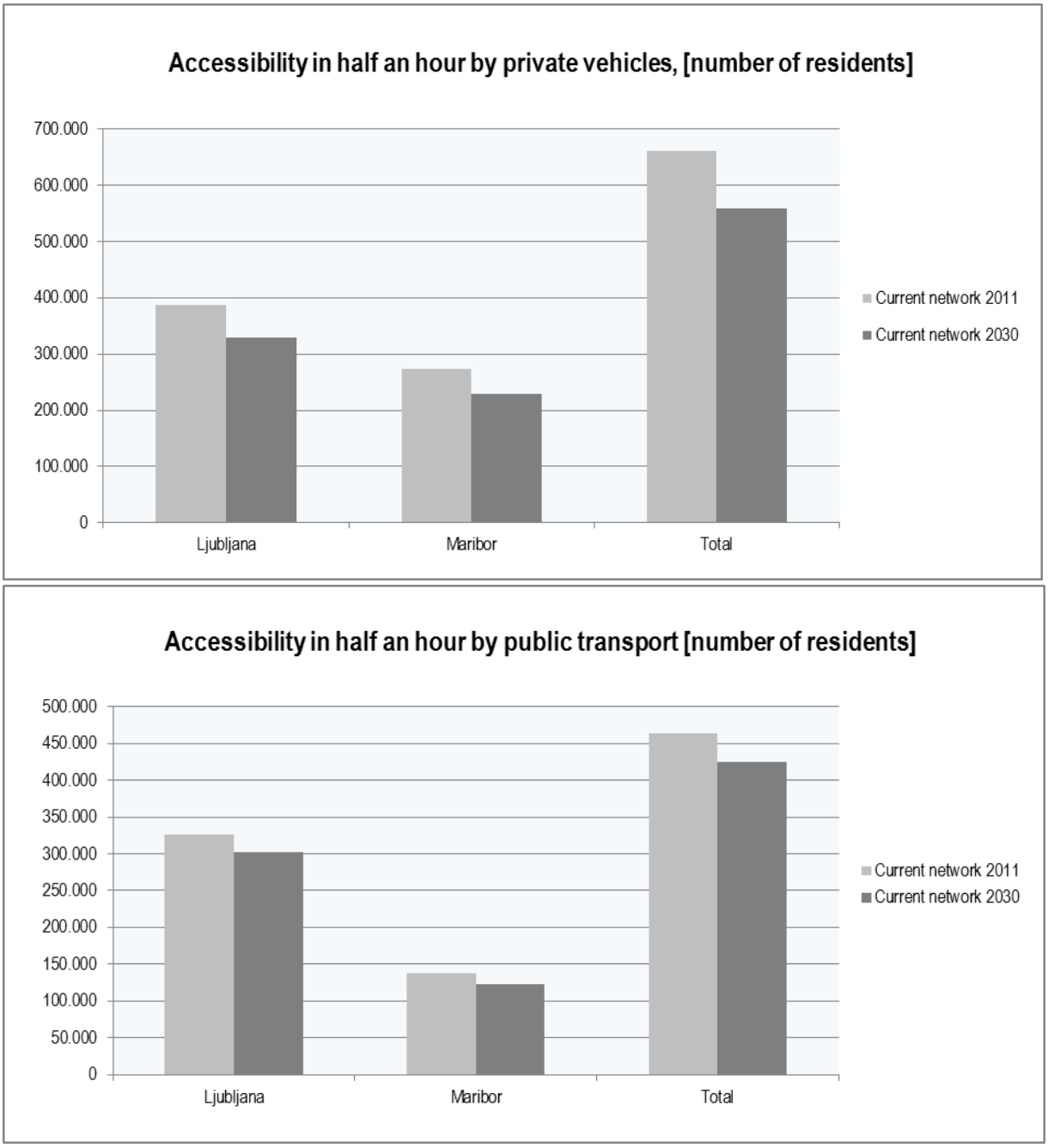


Figure 84 Worsening of accessibility of cohesion centres by private vehicles and public transport

If the current transport arrangement remains the same, accessibility will be poorer in 2030, i.e.:

- by 15 per cent for private vehicles;
- by 8 per cent by public passenger transport;
- the ratio between accessibility by public passenger transport and accessibility by private vehicles will improve, but only due to the much poorer accessibility of private vehicles.

Desired state:

- accessibility by public passenger transport should improve;
- accessibility by private vehicles should not be poorer;
- The Spatial Planning Strategy of Slovenia determines that the integration of the settlement and transport networks must be ensured so that accessibility of public services in gravitation areas of centres of national importance (), and of centres of regional importance in 30–45 minutes is achieved in a sustainable manner, which we have already achieved in terms of calculation, but not in reality (congestions) and by PPT.

Actual state:

- Accessibility by both types of transport could be poorer, more for private vehicles than public passenger transport, since public rail transport is independent of road congestion.
- The accessibility of cohesion centres is significantly poorer (unacceptable) from certain areas in Slovenia.

Finding:

- Accessibility by public passenger transport will not improve; it will worsen.
- Accessibility by private vehicles will not remain at the current level; it will significantly deteriorate, especially in areas where it is already below average.

Proposed measures:

- introduce an efficient and high-capacity public passenger transport with the introduction of a P+R system at the national level;
- eliminate bottlenecks on roads and improve connections to poorly accessible areas.

These two measures would improve social cohesion in the appropriate way, i.e. by significantly improving accessibility by public passenger transport and not worsening accessibility by private vehicles.

3.10.5.2. Traffic safety

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

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

Based on preliminary studies, it was established that Slovenia has:

- over 100 crossings that are unsuitably arranged in terms of safety (Slovene Roads Agency),[29]
- 655 km state roads assessed as high risk (EURORAP),[30]
- 503 passively protected level crossings (only by traffic signs)[31] (a project to eliminate level crossings on the Pragersko–Hodoš section is in progress) and 6 grade-separated crossings of state roads which are being eliminated by the Slovene Roads Agency.

In 2013, 18,904 road accidents happened in Slovenia, 6,542 of them causing physical injuries. There were 130 fatalities and 708 severely injured road users. 24 road accidents happened at level crossings, of which 4 were fatal.

Desired state:

- In the document 'Towards a European road safety area: policy orientations on road safety 2011–2020' (COM(2010) 389), the European Commission determined the framework for policy measures on safe infrastructure as the main factor in reducing fatalities in road transport by 50 per cent by 2020.
- The objective of the Strategy is to reduce fatalities to 141 (2011) to 70 and eventually to 0 by 2020.

Actual state:

- Many dangerous spots and level crossings have been identified on the national road network, which significantly contribute to the occurrence of road accidents.

Finding:

- Without the remediation of dangerous spots and level crossings, and suitable maintenance of the road network, the number of road accidents could further increase by 2020 due to more traffic.

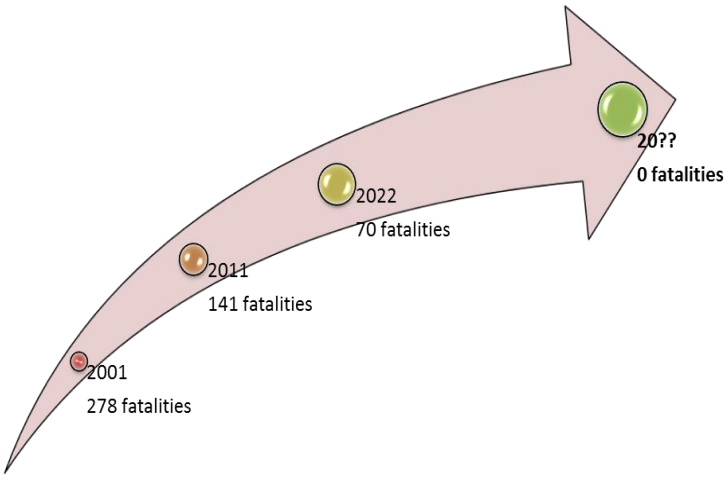


Figure 85 Vision of the Resolution on the National Programme of Public Transport Infrastructure Development in the Republic of Slovenia by 2020 and 2030

[29] Determining places with a high frequency of road accidents for the 2010–2012 period, Omegaconuslt, 2013
[30] Evaluation of the state of traffic safety in Slovenia in comparison with Europe, Risk maps 2009–2011, AMZS, 2012
[31] Safety at level crossings "Stop. The train cannot.", Activity programme, JARSVP, February 2013

Proposed measures:

- a strategic plan to eliminate dangerous crossings, sections and level crossings;
- remediation of spots on the road network with a high frequency of accidents (reconstruction, lighting);
- remediation of critical sections (reconstruction, speed limits, lighting);
- protection and elimination of level crossings, and construction of grade-separated crossings;
- establishment of a predictable network of *self-explanatory roads* (SER) and *forgiving roads*.

3.10.6. Maintenance and other regular costs

As mentioned in the introduction to this chapter, the analysis of the do-nothing alternative assumes that the required maintenance will be carried out on existing infrastructure (in addition to the completion of existing investments). To implement and enhance public passenger transport, suitable subsidies for such transport must be ensured. Therefore, the investments in the aforementioned fields are shown below.

Maintaining the existing level of services requires constant investment in transport arrangements, i.e. two types of investment are required:

- maintaining transport infrastructure and
- subsidising public transport train and bus services.

Maintaining a suitable level of services requires constant maintenance of infrastructure. Lack of maintenance or insufficient maintenance reduces the quality of infrastructure, which in turn impairs operating capacity, safety, and has environmental impacts, etc.

Railways entail five types of maintenance costs:

- regular maintenance,
- investment maintenance,
- reconstructions (maintenance works of public interest);
- maintenance of stations and stops, and
- transport management.

Roads entail the following maintenance costs:

- regular maintenance,
- investment maintenance,
- maintenance works of public interest;
- maintenance of stops, and
- transport management from the transport management centre.

Existing condition of road infrastructure

According to the Slovene Roads Agency at the Ministry of Infrastructure, DARS d. d. managed 769 km of roads, while the Slovene Roads Agency managed 5,969 km in 2012. The total length of public roads in Slovenia is 38,986 km.

Table 31 Road network length in 2012

	Roads (in m)	Slip roads (in m)	Total (in m)
MW	533,308	143,471	676,779
EW	72,797	19,514	92,311
DARS	**606,105**	**162,985**	**769,090**
G1	351,610	2,339	353,949
G2	459,705	5,996	465,701
Total main roads	**811,315**	**8,335**	**819,650**
R1	948,312	1,964	950,276
R2	1,378,502	4,970	1,383,472
R3	2,178,068	436	2,178,504
RT	636,841	44	636,885
Total regional roads	**5,141,723**	**7,414**	**5,149,137**
DRSC	5,953,038	15,749	5,968,787
Total state roads	**6,559,143**	**178,734**	**6,737,877**
LC	11,415,033		11,415,033
LG	111,634		111,634
LZ	668,302		668,302
LP	1,256,098		1,256,098
Total local roads	**13,451,067**	**0**	**13,451,067**
JP	18,680,343		18,680,343
KJ	116,397		116,397
Total public paths	**18,796,740**	**0**	**18,796,740**
Total municipal roads	**32,247,807**	**0**	**32,247,807**
Total public roads	**38,806,950**	**178,734**	**38,985,684**

Source: Annual Report 2011–2012, Ministry of Infrastructure, Slovene Roads Agency

The visual assessment of the condition of road surfaces according to the Modified Swiss Index (MSI) method is carried out on the Slovenian road network every two years. This assessment is the basis for the pavement management system (PMS), but the data may also be used to assess the coefficient of the remaining service life, and, indirectly, to establish types of, and reasons for, damage. The MSI method is based on the visual assessment of carriageways, where the type of damage is assessed according to its magnitude and size.
When determining the level or value of the MSI, cracks, wear and tear, potholes and patches are taken into account. The visual assessments of the condition of carriageways includes a record of their deformity which is not included in the MSI calculation.

The assessments of the condition of carriageways on main and regional roads are given below.

Regardless of the fact that the main and regional road network in the compared period has not significantly worsened, the information that a half of this network is in a very poor and poor condition is a cause for concern[32,33].

[32] Assessment of the condition of carriageways on regional roads (R3 and RT) in the Republic of Slovenia according to assessments in 2012, DRI upravljanje investicij d.o.o., Ljubljana, May 2013
[33] Assessment of the condition of carriageways on main and regional roads (M1, M2, R1, R2) in the Republic of Slovenia according to assessments in 2011, DRI upravljanje investicij d.o.o., Ljubljana, November 2011

Table 32 Assessment of the condition of carriageways on M1, M2, R1 and R2 in 2011

		Condition of carriageways in 2011 by homogeneous sections					
		Very good	**Good**	**Borderline**	**Poor**	**Very poor**	**Total**
G1	km	75.650	58.850	69.100	62.850	96.700	**363.150**
	Share in %	20.83	16.21	19.03	17.31	26.63	**100.00**
G2	km	96.800	75.150	55.800	67.300	172.700	**467.750**
	Share in %	20.69	16.07	11.93	14.39	36.92	**100.00**
R1	km	194.100	169.900	103.850	136.150	331.400	**935.400**
	Share in %	20.75	18.16	11.10	14.56	35.43	**100.00**
R2	km	273.850	215.300	169.850	230.200	472.300	**1.361.500**
	Share in %	20.11	15.81	12.48	16.91	34.69	**100.00**
Total	**km**	**640.400**	**519.200**	**398.600**	**496.500**	**1,073.100**	**3,127.800**
	Share in %	**20.47**	**16.60**	**12.74**	**15.87**	**34.31**	**100.00**

Source: Assessment of the condition of carriageways on main and regional roads (M1, M2, R1, R2) in the Republic of Slovenia according to assessments in 2011, DRI upravljanje investicij d.o.o., Ljubljana, November 2011

Table 33 Assessment of the condition of carriageways on R3 and RT in 2012

		Condition of carriageways in 2012 by homogenous sections					
		Very good	**Good**	**Borderline**	**Poor**	**Very poor**	**Total**
R3	km	503.000	190.650	167.600	179.550	1,053.000	**2,093.800**
	Share in %	24.02	9.11	8.00	8.58	50.29	**100.00**
RT	km	100.900	35.050	47.200	23.350	239.700	**446.200**
	Share in %	22.61	7.86	10.58	5.23	53.72	**100.00**
Total	**km**	**603.900**	**225.700**	**214.800**	**202.900**	**1,292.700**	**2,540.000**
	Share in %	**23.78**	**8.89**	**8.46**	**7.99**	**50.89**	**100.00**

Source: Assessment of the condition of carriageways on regional roads (R3 and RT) in the Republic of Slovenia according to assessments in 2012, DRI upravljanje investicij d.o.o., Ljubljana, May 2013

The table below shows that 41.74 per cent of carriageways on main and regional roads are in a very poor condition and 12.34 per cent are in a poor condition, which indicates lack of investment in regular and investment maintenance.

Table 34 Assessment of the condition of carriageways on main and regional roads

		Condition of carriageways on main and regional roads					
		Very good	**Good**	**Borderline**	**Poor**	**Very poor**	**Total**
Total	**km**	1,244.300	744.900	613.400	699.400	2,365.800	5,667.800
	Share in %	**21.95**	**13.14**	**10.82**	**12.34**	**41.74**	**100.00**

The assessments of the condition of carriageways on motorways and expressways in Slovenia are given below.

The length of motorway and expressway lanes that are in a very poor and poor condition has increased, which shows insufficient investment in regular and investment maintenance of motorway sections[34].

[34] Assessment of the condition of carriageways in the Republic of Slovenia according to assessments in 2011, DRI upravljanje investicij d.o.o., Ljubljana, October 2011

Table 35 Assessment of the condition of carriageways on MW A1 in 2011

			Carriageway condition in 2011					
			Very good	Good	Borderline	Poor	Very poor	Total
A1	AVP	km	147.661	34.006	27.279	20.668	15.652	**245.266**
		Share in %	60.20	13.86	11.12	8.43	6.38	**100.00**
	APP	km	154.716	40.351	18.829	13.768	17.602	**245.266**
		Share in %	63.08	16.45	7.68	5.61	7.18	**100.00**
	APPP	km	21.361	0.950	0.800	0.350	0.000	**23.461**
		Share in %	91.05	4.05	3.41	1.49	0.00	**100.00**
	VVP	km	132.998	41.776	14.758	46.786	9.059	**245.377**
		Share in %	54.20	17.03	6.01	19.07	3.69	**100.00**
	VPP	km	132.670	33.196	20.344	50.576	8.591	**245.377**
		Share in %	54.07	13.53	8.29	20.61	3.50	**100.00**
	VPPP	km	16.050	3.450	4.000	0.550	0.000	**24.050**
		Share in %	66.74	14.35	16.63	2.29	0.00	**100.00**
	Total	**km**	**605.456**	**153.729**	**86.010**	**132.698**	**50.904**	**1,028.797**
		Share in %	**58.85**	**14.94**	**8.36**	**12.90**	**4.95**	**100.00**

Source: Assessment of the condition of carriageways in the Republic of Slovenia according to assessments in 2011, DRI upravljanje investicij d.o.o., Ljubljana, October 2011

Table 36 Assessment of the condition of carriageways on MW A2 in 2011

			Carriageway condition in 2011					
			Very good	Good	Borderline	Poor	Very poor	Total
A2	AVP	km	145.192	21.805	5.500	0.161	0.000	**172.658**
		Share in %	84.09	12.63	3.19	0.09	0.00	**100.00**
	APP	km	152.259	17.249	3.150	0.000	0.000	**172.658**
		Share in %	88.19	9.99	1.82	0.00	0.00	**100.00**
	APPP	km	3.300	0.000	0.000	0.000	0.000	**3.300**
		Share in %	100.00	0.00	0.00	0.00	0.00	**100.00**
	VVP	km	140.015	29.003	2.950	0.250	0.000	**172.218**
		Share in %	81.30	16.84	1.71	0.15	0.00	**100.00**
	VPP	km	143.389	25.679	2.700	0.450	0.000	**172.218**
		Share in %	83.26	14.91	1.57	0.26	0.00	**100.00**
	VPPP	km	13.500	0.450	0.000	0.000	0.000	**13.950**
		Share in %	96.77	3.23	0.00	0.00	0.00	**100.00**
	Total	**km**	**597.655**	**94.186**	**14.300**	**0.861**	**0.000**	**707.002**
		Share in %	**84.53**	**13.32**	**2.02**	**0.12**	**0.00**	**100.00**

Source: Assessment of the condition of carriageways in the Republic of Slovenia according to assessments in 2011, DRI upravljanje investicij d.o.o., Ljubljana, October 2011

Table 37 Assessment of the condition of carriageways on MW A3 in 2011

			Carriageway condition in 2011					
			Very good	Good	Borderline	Poor	Very poor	Total
A3	AVP	km	5.048	1.500	2.900	2.348	0.450	**12.246**
		Share in %	41.22	12.25	23.68	19.17	3.67	**100.00**
	APP	km	2.500	1.650	2.177	5.919	0.000	**12.246**
		Share in %	20.41	13.47	17.78	48.33	0.00	**100.00**
	VVP	km	2.971	5.522	0.932	2.550	0.250	**12.225**
		Share in %	24.30	45.17	7.62	20.86	2.04	**100.00**
	VPP	km	3.171	3.054	2.650	2.950	0.400	**12.225**
		Share in %	25.94	24.98	21.68	24.13	3.27	**100.00**
	Total	**km**	**13.690**	**11.726**	**8.659**	**13.767**	**1.100**	**48.942**
		Share in %	**27.97**	**23.96**	**17.69**	**28.13**	**2.25**	**100.00**

Source: Assessment of the condition of carriageways in the Republic of Slovenia according to assessments in 2011, DRI upravljanje investicij d.o.o., Ljubljana, October 2011

Table 38 Assessment of the condition of carriageways on MW A4 in 2011

			Carriageway condition in 2011					
			Very good	Good	Borderline	Poor	Very poor	Total
A4	AVP	km	20.750	0.000	0.000	0.000	0.000	**20.750**
		Share in %	100.00	0.00	0.00	0.00	0.00	**100.00**
	APP	km	20.470	0.000	0.000	0.000	0.000	**20.470**
		Share in %	100.00	0.00	0.00	0.00	0.00	**100.00**
	VVP	km	20.210	0.000	0.000	0.000	0.000	**20.210**
		Share in %	100.00	0.00	0.00	0.00	0.00	**100.00**
	VPP	km	19.880	0.000	0.000	0.000	0.000	**19.880**
		Share in %	100.00	0.00	0.00	0.00	0.00	**100.00**
	Total	**km**	**81.310**	**0.000**	**0.000**	**0.000**	**0.000**	81.310
		Share in %	**100.00**	**0.00**	**0.00**	**0.00**	**0.00**	100.00

Source: Assessment of the condition of carriageways in the Republic of Slovenia according to assessments in 2011, DRI upravljanje investicij d.o.o., Ljubljana, October 2011

Table 39 Assessment of the condition of carriageways on MW A5 in 2011

			Carriageway condition in 2011					
			Very good	Good	Borderline	Poor	Very poor	Total
A5	AVP	km	78.476	1.098	0.000	0.000	0.000	**79.574**
		Share in %	98.62	1.38	0.00	0.00	0.00	**100.00**
	APP	km	79.374	0.200	0.000	0.000	0.000	**79.574**
		Share in %	99.75	0.25	0.00	0.00	0.00	**100.00**
	VVP	km	78.818	0.950	0.000	0.000	0.000	**79.768**
		Share in %	98.81	1.19	0.00	0.00	0.00	**100.00**
	VPP	km	79.568	0.200	0.000	0.000	0.000	**79.768**
		Share in %	99.75	0.25	0.00	0.00	0.00	**100.00**
	Total	**km**	**316.236**	**2.448**	**0.000**	**0.000**	**0.000**	318.684
		Share in %	**99.23**	**0.77**	**0.00**	**0.00**	**0.00**	100.00

Source: Assessment of the condition of carriageways in the Republic of Slovenia according to assessments in 2011, DRI upravljanje investicij d.o.o., Ljubljana, October 2011

Table 40 Assessment of the condition of carriageways on EW H2 in 2011

			Carriageway condition in 2011					
			Very good	Good	Borderline	Poor	Very poor	Total
H2	AVP	km	7.200	0.000	0.000	0.000	0.000	**7.200**
		Share in %	100.00	0.00	0.00	0.00	0.00	**100.00**
	APP	km	6.250	0.000	0.234	0.000	0.000	**6.484**
		Share in %	96.39	0.00	3.61	0.00	0.00	**100.00**
	VVP	km	6.063	1.143	0.000	0.000	0.000	**7.206**
		Share in %	84.14	15.86	0.00	0.00	0.00	**100.00**
	VPP	km	5.750	0.243	0.000	0.550	0.000	**6.543**
		Share in %	87.88	3.71	0.00	8.41	0.00	**100.00**
	Total	**km**	**25.263**	**1.386**	**0.234**	**0.550**	**0.000**	27.433
		Share in %	**92.09**	**5.05**	**0.85**	**2.00**	**0.00**	100.00

Source: Assessment of the condition of carriageways in the Republic of Slovenia according to assessments in 2011, DRI upravljanje investicij d.o.o., Ljubljana, October 2011

Table 41 Assessment of the condition of carriageways on EW H3 in 2011

			Carriageway condition in 2011					
			Very good	Good	Borderline	Poor	Very poor	Total
H3	AVP	km	7.118	2.654	0.000	0.000	0.450	**10.222**
		Share in %	69.63	25.96	0.00	0.00	4.40	**100.00**
	APP	km	4.957	1.811	1.450	0.000	2.004	**10.222**
		Share in %	48.49	17.72	14.19	0.00	19.60	**100.00**
	VVP	km	1.750	6.636	0.000	0.000	1.400	**9.786**
		Share in %	17.88	67.81	0.00	0.00	14.31	**100.00**
	VPP	km	1.840	3.098	2.600	0.000	2.248	**9.786**
		Share in %	18.80	31.66	26.57	0.00	22.97	**100.00**
	Total	**km**	**15.665**	**14.199**	**4.050**	**0.000**	**6.102**	**40.016**
		Share in %	**39.15**	**35.48**	**10.12**	**0.00**	**15.25**	**100.00**

Source: Assessment of the condition of carriageways in the Republic of Slovenia according to assessments in 2011, DRI upravljanje investicij d.o.o., Ljubljana, October 2011

Table 42 Assessment of the condition of carriageways on EW H4 in 2011

			Carriageway condition in 2011					
			Very good	Good	Borderline	Poor	Very poor	Total
H4	AVP	km	24.366	8.413	4.188	2.650	2.500	**42.117**
		Share in %	57.85	19.98	9.94	6.29	5.94	**100.00**
	APP	km	25.816	8.187	2.964	5.150	0.000	**42.117**
		Share in %	61.30	19.44	7.04	12.23	0.00	**100.00**
	VVP	km	28.487	12.600	0.085	0.950	0.000	**42.122**
		Share in %	67.63	29.91	0.20	2.26	0.00	**100.00**
	VPP	km	30.722	10.450	0.850	0.100	0.000	**42.122**
		Share in %	72.94	24.81	2.02	0.24	0.00	**100.00**
	Total	**km**	**109.391**	**39.650**	**8.087**	**8.850**	**2.500**	**168.478**
		Share in %	**64.93**	**23.53**	**4.80**	**5.25**	**1.48**	**100.00**

Source: Assessment of the condition of carriageways in the Republic of Slovenia according to assessments in 2011, DRI upravljanje investicij d.o.o., Ljubljana, October 2011

Table 43 Assessment of the condition of carriageways on EW H5 in 2011

			Carriageway condition in 2011					
			Very good	Good	Borderline	Poor	Very poor	Total
H5	AVP	km	5.933	1.650	0.250	0.000	0.000	**7.833**
		Share in %	75.74	21.06	3.19	0.00	0.00	**100.00**
	APP	km	5.933	1.900	0.000	0.000	0.000	**7.833**
		Share in %	75.74	24.26	0.00	0.00	0.00	**100.00**
	VVP	km	5.268	2.049	0.000	0.250	0.000	**7.567**
		Share in %	69.62	27.08	0.00	3.30	0.00	**100.00**
	VPP	km	5.268	2.049	0.000	0.250	0.000	**7.567**
		Share in %	69.62	27.08	0.00	3.30	0.00	**100.00**
	Total	**km**	**22.402**	**7.648**	**0.250**	**0.500**	**0.000**	**30.800**
		Share in %	**72.73**	**24.83**	**0.81**	**1.62**	**0.00**	**100.00**

Source: Assessment of the condition of carriageways in the Republic of Slovenia according to assessments in 2011, DRI upravljanje investicij d.o.o., Ljubljana, October 2011

Table 44 Assessment of the condition of carriageways on EW H6 in 2011

			Carriageway condition in 2011					
			Very good	Good	Borderline	Poor	Very poor	Total
H6	AVP	km	0.870	0.600	0.410	0.000	0.000	**1.880**
		Share in %	46.28	31.91	21.81	0.00	0.00	**100.00**
	APP	km	1.120	0.400	0.000	0.000	0.000	**1.520**
		Share in %	73.68	26.32	0.00	0.00	0.00	**100.00**
	VVP	km	0.830	0.000	0.000	0.000	1.040	**1.870**
		Share in %	44.39	0.00	0.00	0.00	55.61	**100.00**
	VPP	km	0.780	0.000	0.000	0.700	0.000	**1.480**
		Share in %	52.70	0.00	0.00	47.30	0.00	**100.00**
	Total	**km**	**3.600**	**1.000**	**0.410**	**0.700**	**1.040**	**6.750**
		Share in %	**53.33**	**14.81**	**6.07**	**10.37**	**15.41**	**100.00**

Source: Assessment of the condition of carriageways in the Republic of Slovenia according to assessments in 2011, DRI upravljanje investicij d.o.o., Ljubljana, October 2011

Table 45 Assessment of the condition of carriageways on EW H7 in 2011

			Carriageway condition in 2011					
			Very good	Good	Borderline	Poor	Very poor	Total
H7	AVP	km	3.526	0.000	0.000	0.000	0.000	**3.526**
		Share in %	100.00	0.00	0.00	0.00	0.00	**100.00**
	APP	km	2.626	0.000	0.000	0.000	0.000	**2.626**
		Share in %	100.00	0.00	0.00	0.00	0.00	**100.00**
	VVP	km	2.857	0.000	0.000	0.000	0.000	**2.857**
		Share in %	100.00	0.00	0.00	0.00	0.00	**100.00**
	VPP	km	2.657	0.000	0.000	0.000	0.000	**2.657**
		Share in %	100.00	0.00	0.00	0.00	0.00	**100.00**
	Total	**km**	**11.666**	**0.000**	**0.000**	**0.000**	**0.000**	**11.666**
		Share in %	**100.00**	**0.00**	**0.00**	**0.00**	**0.00**	**100.00**

Source: Assessment of the condition of carriageways in the Republic of Slovenia according to assessments in 2011, DRI upravljanje investicij d.o.o., Ljubljana, October 2011

The table below includes MSI for all motorways and expressways. It shows 2.5 per cent of carriageways in 2011 were in a very poor condition and 6.39 per cent in a poor condition.

Table 46 Assessment of the condition of carriageways on motorways and expressways

			Carriageway condition in 2011					
			Very good	Good	Borderline	Poor	Very poor	Total
Skupaj odseki AC in HC	AVP	km	446.140	71.726	40.527	25.827	19.052	**603.272**
		Share in %	73.95	11.89	6.72	4.28	3.16	**100.00**
	APP	km	456.021	71.748	28.804	24.837	19.606	**601.016**
		Share in %	75.88	11.94	4.79	4.13	3.26	**100.00**
	APPP	km	24.661	0.950	0.800	0.350	0.000	**26.761**
		Share in %	92.15	3.55	2.99	1.31	0.00	**100.00**
	VVP	km	420.267	99.679	18.725	50.786	11.749	**601.206**
		Share in %	69.90	16.58	3.11	8.45	1.95	**100.00**
	VPP	km	425.695	77.969	29.144	55.576	11.239	**599.623**
		Share in %	70.99	13.00	4.86	9.27	1.87	**100.00**
	VPPP	km	29.550	3.900	4.000	0.550	0.000	**38.000**
		Share in %	77.76	10.26	10.53	1.45	0.00	**100.00**
	Total	**km**	**1,802.334**	**325.972**	**122.000**	**157.926**	**61.646**	**2,469.878**
		Share in %	**72.97**	**13.20**	**4.94**	**6.39**	**2.50**	**100.00**

The growth in traffic assignment on Slovenian roads in the recent years has been significantly higher than initially forecast and anticipated, which means that adjustment has to be made according to the growth in traffic assignment also through increasing funds for the regular and investment maintenance of motorways and expressways, and main and regional roads.

3.10.6.1. Road infrastructure maintenance

To ensure suitable mobility, a road network is being constructed, which must be maintained at a suitable and high-quality condition. This means it must be maintained, repaired and reconstructed. Road preservation must be based on comprehensive economic treatment, i.e. on the interests of users and managers.

Immediately after their construction, roads are exposed to increasing traffic combined with increasing burdening due to climate change. Changes created by these effects in materials built into road structures result in increasingly inadequate structures, depending on the characteristics of external impacts and the current condition of individual elements of road structures. This is called fatigue.

Road elements must be constantly kept in a suitable condition according to objective, transport, technical, economic and environmental criteria. On this basis, the types and priorities of measures to provide the conditions for the following must be determined:

- maintenance of the substance of roads and facilities;
- maintenance and/or improvement of transport, technical and safety road characteristics;
- safe traffic flow;
- environmental protection against harmful effects of roads and traffic;
- road protection against harmful effects of the environment;
- neat appearance; and
- rational implementation of maintenance.

In practice, various procedures for road maintenance have been introduced:

- preventive (planned) maintenance;
- the most suitable maintenance depending on the condition of roads required regular monitoring of the condition and immediate action when necessary;
- waiting for roads to be demolished is the most expensive manner of road maintenance, requiring considerable funding, which is usually not available.

The following types of maintenance were defined:

- regular maintenance of public roads is a mandatory public utility service which comprises maintenance to keep public roads in a condition that ensures their safety and passability, supervision of the conditions of public roads and road areas, and allowing for the passability of roads in cases of natural and other disasters;
- investment maintenance includes works on public roads that do not change the capacity of the road, the size of its individual elements, the scope of installations, devices and equipment, or other infrastructure in the area of a public road, and that must not intervene with areas outside road areas; such maintenance also includes improvements to road areas related to public road safety;
- maintenance of public interest includes the reconstruction of public roads that changes the capacity of the road, the size of its individual elements, the scope of installations, devices and equipment, and other infrastructure in the area of a public road, and that must not intervene with areas outside road areas; such maintenance also includes improvements to road areas related to public road safety.

Regular maintenance of state roads comprises:

- regular maintenance of state roads;
- maintenance of state road crossings;
- maintenance of bridging structures on state roads;

- maintenance of state roads at border crossings;
- maintenance of road surfaces, and facilities and devices in settlements;
- maintenance of municipal roads when traffic is redirected;
- maintenance of national cycling connections.

Pursuant to the Roads Act, a National Traffic Management Centre (NTMC) must be established to supervise and manage traffic, and inform the public of the condition of state roads and traffic on these roads, which ensures the collection of all available data on the condition of state roads and traffic on these roads in one place; for traffic supervision and management; to inform the public of the condition of state roads and traffic on these roads through the media.

Regular maintenance activities include especially:

- inspection service;
- regular maintenance of road surfaces (cleaning and repairs);
- regular maintenance of shoulders;
- regular maintenance of drainage;
- regular maintenance of banks;
- regular maintenance of traffic signalisation and equipment (cleaning, upgrading, replacement or repairs of worn out, damaged, incomplete or missing traffic signalisation or equipment);
- regular maintenance of road amenities and arrangements;
- regular maintenance of vegetation;
- provision of visibility;
- road cleaning;
- regular maintenance of road facilities (cleaning and minor repairs);
- supervision of axle loads, total mass and size of vehicles;
- intervention measures (in cases of natural disasters – storms, floods, landslides, glaze ice, earthquakes, severe road accidents and other extraordinary events, or at the request of the police);
- winter service; and
- establishment of passability following natural disasters.

Investment maintenance activities are investments in increasing or preserving the assets of the state, local communities and other investors in public roads which will have later benefits.

Table 47 Investment maintenance activities

BANK	Restoration of banks	A bank is natural or constructed sloped land along a road. This may include the restoration or rearrangement of banks.
CYCL	Cycling connections	The national cycling network consists of long-distance, main and regional cycling connections. Generally, they are arranged as independent cycling routes, and in settlements also as cycle lanes, cycle lanes along roads or as cycle lanes on pavements. The national cycling connection network is connected to municipal cycling connections.
CROS	Crossroads	A crossroads is a road surface where various traffic flows join, branch off or intersect. It may involve only traffic lights or changed signalisation or the reconstruction of a crossroads (construction of new lanes, roundabouts, etc.).
MODE	Road modernisation	Modernisations of roads are minor reconstructions to replace macadam carriageways with asphalt.
NEW	Construction of new roads	A new construction is the construction of a new road on new land (new route). New construction activities include motorway slip roads which are not included in the motorway system construction programme and certain other new roads (generally municipal roads) to establish basic communication along the border with Croatia.
STRN	Construction of new bridging structures	The construction of new structures is based especially on the need to relocate state roads due to poor technical elements, or includes the construction of grade-separated crossings which provide greater traffic safety and capacity.

STRRec	Reconstruction of bridging structures	This is the reconstruction of the structural elements of a bridging structure or other facility on the road.
STRRen	Renewal of bridging structures	This is the renewal of the structural elements of a bridging structure or other facility, renewal of the road surface and passages for pedestrians, municipal facilities, slip roads and connections to banks.
STRC	Replacement construction of bridging structures	This is the construction of replacement facilities, especially facilities whose renewal would be irrational.
REST	Road renewal	The renewal of roads includes not only the renewal of carriageways, but also minor repairs to technical elements of roads to ensure safety without additional activities outside the road area.
BYPA	Bypasses	The measure of constructing bypasses is intended to relieve settlements of transit traffic, especially when problems in a settlement cannot be solved by any other measure.
ENVI	Environmental protection against traffic	The measures of environmental protection against traffic include measures against excessive burdening of the environment, noise protection measures and biosphere protection measures.
LAND	Landslide rehabilitation	These measures include the rehabilitation of landslides, subsidence, washouts and other major damages on roads. This is a construction activity to stabilise landslides with suitable procedures.
PERI	Periodic maintenance of state roads	Resurfacings entails more demanding and extensive maintenance works aimed at a the long-term arrangement of individual road sections. They are performed occasionally, according to the degree of wear and tear or damage to a road.
CULV	Renewal of culverts	A culvert is a construction facility up to three metres long which passes under an embankment.
RECO	Road reconstruction	Reconstructions include all major upgrades of roads through expansions, adjustments to road structure and major corrections to route direction, improvements to elements of routes and structural parts of roads mainly outside existing roads with additional major activities outside road areas.
ARRA	Road arrangements through settlements	The measure includes arrangements of roads through settlements which may entail resurfacing or reconstructing roads through settlements, arranging pavements, bus stops, pedestrian crossings, rest areas, tractor paths, traffic calming areas, etc. This measure also includes measures to improve traffic safety.
WALR	Renewal of supporting and retaining walls	Support and retaining walls ensure the stability of the entire structure. This may include the renewal of old wall or the construction of new walls.
RMAI	Regular maintenance of state roads	This includes smaller scale construction, technical and other activities to maintain the condition of roads and roadside areas, traffic signalisation and equipment, and to ensure traffic safety and passability. It also includes supervision of the condition of roads and buffer zones, and the provision of passability in cases of natural and other disasters.
TRAN	Transport	The measure used to include public utility services in line transport, digital tachographs, the establishment of vehicle compliance; today, it only includes the payment of compensations due to traffic.
TOTA	Preparatory works for investment maintenance	Preparatory works for investments comprise technical and investment documentation the preparation of which must commence two to three years prior to the planned implementation. The planned funds facilitate suitable dynamics of the preparation.
ADMI	Road administration, management and protection	The measure includes all costs required for the uninterrupted operation of the Slovene Roads Agency (salaries, minor investments, etc.), road management and protection, development and research tasks, participation in international projects, quality system management, etc.

3.10.6.2. Railway infrastructure maintenance

The construction and maintenance of railway infrastructure, along with organisational and technological aspects, is also a key success factor in a more open, marketable and competitive space, where railways which acquire almost 60 per cent of cargo via the port of Koper can now be found. The port of Koper has seen constantly increasing transhipment in recent decades, and is a key traffic hub of European importance.

The total length of track in the Republic of Slovenia is 1,228 km, of which 330 km is double-track and 172 km is single-track. The precise division is shown in the tables below.

Table 48 Basic data on railway network

Total length of tracks:	**1,228**	**km**
Double-track	330	km
Single-track:	898	km
For freight transport	106	km
For passenger transport	2	km
For mixed transport	1,120	km
Electric traction:		
Length of electrified tracks	503	km
Length of tracks:	**1,558**	**km**
Facilities:		
All bridges, viaducts and culverts (number)	3,348	
All bridges, viaducts and culverts (km)	17	km
Tunnels and galleries (number)	93	
Tunnels and galleries (km)	37	km
Stations (number):	**128**	
For freight transport	11	
For passenger transport	8	
For mixed transport	108	

Source: http://www.slo–zeleznice.si/sl/podjetje/infrastruktura/zeleznisko_omrezje/statisticni_podatki

- **Permissible axle load of tracks:** in the Republic of Slovenia, 146 km of track have a permissible axle load 16 t/axle, 91 km of track with a permissible 18 t/axle, 589 km with permissible axle load 20 t/axle, and 408 km with permissible axle load 22,5 t/axle[34].
- **Electrification:** almost all the track of Slovenske železnice is fully powered with a direct rated voltage of 3 kV; only on border sections has electrification been implemented with the same system as in Austria (15 kV, 16,67 Hz) and Croatia (25 kV, 50 Hz)35.
- **Signalling safety devices:** 668 km of track in Slovenia are equipped with signalling safety devices36.
- **Telecommunications:** 545 km of track in Slovenia are equipped with digital telecommunication devices and 324 km of track are equipped with radio dispatch systems37.
- **Level crossings:** in the Republic of Slovenia, there are 838 level crossings, of which 503 are passively and 335 actively protected. Most passively protected level crossings are located on the following lines: state border–Metlika–Novo mesto–Ljubljana, Grosuplje–Kočevje and Novo mesto–Straža, Pragersko–Središče–state border, Ormož–Murska Sobota–Hodoš–state border, Ljutomer–Gornja Radgona, Grobelno–Stranje–Rogatec–state border, Celje–Velenje. The majority of extraordinary events occur on the following lines: Domžale–Jarše–Kamnik, Rače–Hoče–Maribor Tezno, Šoštanj–Velenje, Ljutomer–Beltinci, Ljubljana–Brezovica–Preserje, Novo mesto–Mirna Peč–Ivančna Gorica, Novo mesto–Straža. [38]

Public railway infrastructure is a constructed national asset owned by the State. It consists of facilities and devices required for uninterrupted rail transport, and adjoining land that functionally serves its intended use (Official Gazette of the Republic of Slovenia, no. 11/11).

[35] http://www.slo–zeleznice.si/podjetje/infrastruktura/zeleznisko_omrezje/elektroenergetika

[37] http://www.slo–zeleznice.si/sl/podjetje/infrastruktura/zeleznisko_omrezje/telekomunikacije

[38] Safety at level crossings “Stop. The train cannot.”, Activity programme (media material), Slovenian Traffic Safety Agency, Ljubljana, February 2013

Railway tracks consist of a substructure, superstructure, signalling safety and telecommunication devices, facilities and buildings for traffic management and arrangement, stable devices for electric traction and tracks (Official Gazette of the Republic of Slovenia, no. 36/10).

Pursuant to the Directive on the interoperability of the railway system within the Community (Directive 2008/57/EU, 2008), three structural subsystems refer to railway tracks: infrastructure, energy and control–command, and signalling along tracks.

The infrastructure subsystem refers to tracks, points, engineering structures (bridges, tunnels, etc.), associated station infrastructure (platforms, access zones, including the needs of persons with reduced mobility, etc.), and safety and protective equipment.

The energy subsystem includes devices for electrification, including overhead lines and electricity meters.

The control–command and signalling subsystem includes all the equipment necessary to ensure safety, and to command and control the movements of trains travelling on the network.

The trans-European railway network (TEN–T) encompasses the main lines in Slovenia, of which only the Koper/Trieste–Ljubljana–Zidani Most–Maribor, Pragersko–Hodoš, Maribor–Gradec lines, and the anticipated Ljubljana–Jesenice line with a connection to Ljubljana Jože Pučnik Airport are in the core European network. The maintenance, construction or modernisation of the main lines must take into account the interoperability conditions laid down in the Directive on the interoperability of the railway system within the Community (Directive 2008/57/EU, 2008).

Maintaining railway infrastructure means organising or implementing works required to maintain its operating capacity. Railway infrastructure maintenance is a public utility service implemented, on behalf and for the account of the State, by its manager, i.e. SŽ Infrastruktura d.o.o. within Holding Slovenskih železnic.

Railway infrastructure maintenance is divided into regular and investment maintenance or the reconstruction of railway infrastructure (Official Gazette of the Republic of Slovenia, no. 11/11).

Regular maintenance
Regular maintenance comprises works that maintain normal operating capacity of a railway line and ensure traffic safety. It also includes the so-called *substitution in the framework of maintenance* which means a substitution of individual components during preventive and corrective maintenance with works with identical function and mode of operation (Directive 2008/57/EU, 2008). Regular maintenance also encompasses track inspection, supervision and control of the condition of tracks, implementation of measurements, planning and organisation of maintenance, managing various registers and records, providing consents for activities in buffer and track zones, implementation of winter service, and provision of passability in case of natural and other disasters.

Regular maintenance is carried out as intervention or systematically.

Intervention maintenance means regular elimination of individual defects established on the basis of track inspections or the results of measuring service. These are defect that must be eliminated immediately or within a short period of time, as they could affect traffic safety or regularity. They encompass local repairs of track width, substitution of individual sleepers, substitution of damaged tracks, substitution of individual fastening or binding material,

lubrication of tracks, tightening of fastening material, local repairs of direction and height of tracks or points, adding of stone chippings, laying of switches in continuous welded tracks, etc. Intervention maintenance is usually carried out with hand tools or light hand-held machines without closing the line (in intervals between individual trains).

Systematic maintenance is carried out on the basis of a preliminary prepared plan of required maintenance works which is based on measuring data and the assessment of the general condition of the superstructure. Works are carried out with special machinery for track maintenance, and the line is usually closed.

Systematic regular maintenance includes machine regulation of tracks and points in order to correct height and direction-related geometrical errors, sieving, supplementation, stabilisation and profiling of track ballast, chemical destruction of grass and weed in track ballast, machine grinding of tracks, etc.

Permissible deviations or tolerances of individual parameters of superstructure are determined in the Rules on railway line superstructure (Official Gazette of the Republic of Slovenia, no. 9/10), those of substructure in the Rules on railway track substructure (Official Gazette of the Republic of Slovenia, no. 93/13), and for main railway lines also in the Regulation concerning the technical specification for interoperability relating to the telematic applications for the freight subsystem of the trans-European conventional rail system (OJ L 126, 2011).

Investment maintenance (renewal)
Investment maintenance or renewal comprises works carried out at longer intervals. These are especially the systematic renewal of individual track elements which do not change the entire operation of the railway subsystem or its function (Directive 2008/57/EU, 2008). Regarding the effect, renewal is the same as modernisation, but does not change the parameters of the technical state. It is sometimes difficult to distinguish renewal from regular maintenance, especially from substitution during maintenance, as it frequently includes the same works with the same objective. Investment maintenance (renewal) differs from substitution during maintenance in that the latter includes the possibility of achieving the track condition compliant with the TSI, while this is not anticipated during regular maintenance.

A characteristic of investment maintenance is that it is not usually carried out as an intervention at individual locations, but rather over longer sections of track during longer periods and with greater use of materials. Investment maintenance is the result of general and permanent wear and tear on individual elements of the superstructure established on the basis of multiple inspections, observations and measurements with measuring carriages. Investment maintenance of the superstructure encompasses especially the systematic substitution of tracks or sleepers over longer sections of track, the substitution of individual elements of points, substitution of fastening and binding material, sieving, and adding to track ballast.

Public railway infrastructure management
Public railway infrastructure management includes the conclusion of legal transactions related to public railway infrastructure management and station facilities owned by the State, but which are not part of public railway infrastructure.

Public railway infrastructure management also comprises the preparation of a plan proposal for the maintenance of the existing public railway infrastructure and expert groundwork for new development projects of railway infrastructure.

Income generated by the management are used for public railway infrastructure maintenance.

3.10.6.3. Subsidies and compensations of costs

Public passenger transport is a fundamental segment of transport options, as it may be used by all residents both motorised and non-motorised. Therefore, it is an indispensable part of transport options, since it is a service the State must provide and is thus defined as a public utility service. As it is an urgent service which must be provided by the State and due to public interest, PPT is classified as a public asset and as such, is exempt to a certain point from the mechanism of supply and demand.

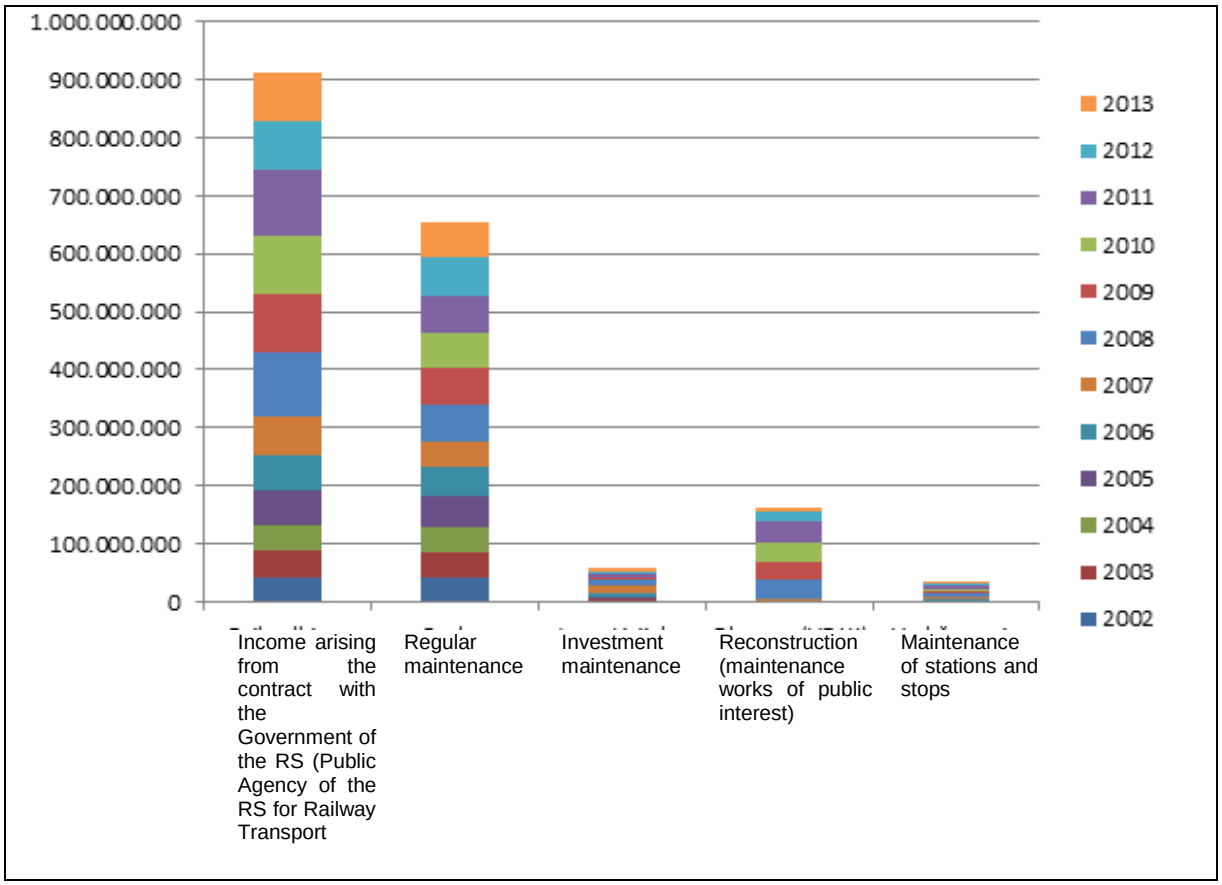
Income based on the acceptable prices of tickets cannot cover the costs incurred by the operation of public transport. Therefore, the State pays carriers compensation between transport costs and income in order for them to implement this mandatory public utility service; the compensation is based on ticket sales in rail and bus transport. In addition, the State ensures free or subsidised transport for certain groups of residents. Primary school pupils who reside in settlements over 4 km away from school, pupils who cannot go to school on safe routes to school, pupils who could be endangered by wild animals on their way to school, and certain groups of pupils with special needs are eligible for free transport. The transport of secondary school and university students, and unemployed people who participate in adult education is subsidised.

Costs of infrastructure maintenance and subsidies

Table 49 shows the current maintenance costs of roads and railway (2013), and current costs of state and municipal subsidies, as well as expected required maintenance costs.

Table 49 Maintenance and subsidy costs charged to the state budget (EUR excluding VAT)

Maintenance	**2013 (EUR)**
State roads	
Regular maintenance	64,837,000
Investment maintenance	84,983,000
Other	19,796,000
Total state roads	**169,616,000**
Railway	
Regular maintenance	61,500,000
Investment maintenance	7,300,000
Renovation	9,000,000
Maintenance of stations and stops	3,688,525
Transport management	33,000,000
Total railway	**114,488,525**
Subsidies and compensations 2013	
General bus transport	63,003,000
Rail transport	56,375,000
School buses	42,000,000
Total subsidies and compensations 2013	**161,378,000**



Source: Annual report of Slovenske železnice 2012–2002 and expert services' assessment SŽ, Infrastructure for maintenance costs in 2014, 2015, and 2016.

Figure 86 Railway maintenance costs 2004–2016

DARS maintains motorways, but these costs are not borne by the state budget. In 2013, DARS allocated EUR 42,679,590 excluding VAT to regular and investment maintenance, i.e. EUR 52,063,000 including VAT or EUR 55,494/km/year excluding VAT.

Total annual costs of maintenance and subsidies borne by the state budget amounted to EUR 445,482,525 in 2013. Investments required to preserve or improve the condition of the network will have to be increased. The determination of amounts of anticipated payments from the state budget must be based on objective and model-supported calculations.

Maintaining railways is the most expensive, as it is almost twice as expensive as maintaining motorways and expressways (which do not burden the state budget), and six to eight times more expensive than maintaining state roads.

It was assessed that maintenance costs should be 40 per cent higher than currently in all segments of the transport system. This signifies an additional amount of approx. EUR 35 million per year for state roads and EUR 45 million per year for railways, or a total of some EUR 80 million per year excluding VAT.

Desired state:

- Maintain the current level of service by partial improvements.

Actual state:

- The level of compensations and subsidies corresponds to the current level of the public passenger transport service, while it is insufficient for the maintenance of public roads and railways.

Finding:

- Insufficient funds are allocated for the maintenance of public roads and railways (and motorways and expressways).
- Additional public passenger transport lines and increased frequency of service will also increase the requirements for additional funds for compensations and subsidies.

Proposed measures:

- 40 per cent more funds or approx. EUR 80 million excluding VAT should be allocated for the maintenance of public roads and railways (and motorways and expressways), which would be borne by the state budget.
- More rational arrangement of public passenger transport and 20 per cent more funds for compensations.

4. SWOT ANALYSIS

A SWOT (strengths, weaknesses, opportunities, threats) analysis is a key tool and a basis for devising the transport strategy. A thorough analysis of all transport infrastructure factors gives us a true insight into its real situation, on the basis of which an appropriate strategy can be developed. The SWOT analysis of transport and transport infrastructure in Slovenia shows numerous strengths that should be exploited and also draws attention to some weaknesses and threats, the effects and consequences of which we will try to prevent or at least mitigate by introducing transport policy measures.

Due to its geographical position Slovenia is an important transit area within Europe since it is crossed by two TEN-T corridors. The transit transport is dense on motorways and railways as well as in the Port of Koper. The railway plays an important role in freight transport. In the last two decades Slovenia has built a developed motorway infrastructure. However, great attention will have to be paid to rail, maritime and public transport in the future.

The basis for drawing up the SWOT analysis is the study *"National Situation and Perspectives for Slovenia in the Field of Sustainable Transport"*; EC, DG-Regio, February 2013. However, it was supplemented for the needs of this Strategy.

4.1. COMMON SWOT ANALYSIS OF TRANSPORT

STRENGTHS	**WEAKNESSES**
– geographical position (the shortest link between the Balkans and the Adriatic and the link between SW Europe and E Europe); – integration in the TEN-T network; – exit to the high seas with a developed port and established hinterland connections; – developed motorway infrastructure with connections to neighbouring countries; – high income share of freight transport contractors in the European market; – transport tradition, especially road transport tradition; – good accessibility (30-45 min) to jobs and functions in urban ("regional") centres and motorway junctions.	– lack of connection between contractors of transport services and lack of connection between different types of transport infrastructure (intermodality, multimodality), absence of logistic centres; – dispersed population with a great number of settlements (6031), among which small settlements predominate (3798 settlements with a population from 50 to 500 inhabitants) and consequently expensive construction and maintenance of infrastructure that can meet the requirements in terms of accessibility and connectivity at different levels; – underdeveloped and unconnected public passenger transport; – uncompetitive railway network compared to the road network (deficient organisation of railway transports, worn out or obsolete railway infrastructure and non-harmonised with TSI –technical standards for the interoperability of railway systems, insufficient number of contemporary transport modes on the railways); – trunk, regional and local roads are also unsuitably categorised, under the administrative-political and not just transport-functional criterion, which is the basic reason for a dangerous grey road network with roads that do not fulfil several transport functions simultaneously (grey roads); partly inadequate technical elements, partly inadequate driving surfaces, partly deficient measures for providing traffic safety; – traffic congestion in the vicinity of large cities reduce actual accessibility and worsen the quality of life; – high environmental costs and high share of protected areas (Natura 2000); – dependence of daily commuters on passenger vehicles (high share of motorisation).

OPPORTUNITIES	THREATS
– unification and harmonisation of transport systems' operations; – development of new transport technologies (e.g. electric vehicles, new forms of handling goods); – increasing the scope of railway freight transport; – relocation of production to East Asia; the Northern Adriatic is gaining in importance as an entry port for finished products; – unification of existing infrastructure operations: Slovenian service providers would provide comprehensive services instead of partial logistics services; – development of (South) Eastern Europe (and Turkey) and its integration into the European Union will enable increasing transport flows; – development of contemporary railways on the TEN-T corridors passing through Slovenia, reducing goods travel time through the whole logistics chain; – developed capacities and infrastructure of public airports for international air transport in Slovenia to enable the transport of considerably more passengers; – development of intermodal systems (airport-railway-road-port) where the need for such services exist.	– redirection of transit transport flows to a parallel network through Italy, Austria, Hungary or Croatia due to unduly slow development of railway transport infrastructure; – redirection of goods port transit to North Sea ports due to the inadequate connection of Adriatic ports of Venice, Trieste, Koper and Rijeka and due to unsuitable, especially hinterland, rail connections; – growing traffic jams and reduced level of safety in goods and passenger transport due to unduly slow network modernisation; – increasing suburbanisation - the continuation of the trend of dispersed sprawl of settlements with low population densities which hinders the establishment of an efficient public passenger transport system; – continuing lack of connections between conductors of public passenger transport; – regression of the maintenance and development of the network of other state highways that will not be able to take over transport flows; – socially unacceptable degradation of the (residential) environment; – civil air transport is a threat in terms of the quickly developing competitive airport network in Slovenian border areas (Trieste, Venice, Klagenfurt, Graz, Zagreb, Pula, Rijeka, etc.); – reducing the possibilities of funding transport infrastructure through the national budget; – reducing the co-funding of the EU in the 2014-2020 period and especially after 2020; – high environmental costs (including the demands of the Kyoto Protocol); – increasing number of traffic jams in larger cities.

4.2. SWOT ANALYSIS OF RAILWAYS

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
– Geographical position – Integration into the European land transport network, the TEN-T network – Connection of the railways to the high seas with a developed port – Favourable modal split on the railways from the Port of Koper (60% of freight transported by rail)	– Less competitive railway network and (compared to the road network) deficient organisation of railway transport – Worn out and obsolete railway infrastructure and lack of harmonisation with the technical standards of interoperability – Insufficient number of contemporary transport modes on the railways – Deficient railway information system and outdated dispatch of passengers – Lack of budgetary means prevents the multi-annual maintenance planning of public railway infrastructure	– Development of new transport technologies (new forms of shunting) – Further development of (South) Eastern Europe (and Turkey) and its integration into the European Union will enable an increase in transport flows, especially transit flows on the railways; – Development of contemporary railways on TEN-T corridors passing through Slovenia, reducing freight travel time through the whole logistics chain; – Contemporary activities and projects of upgrading the lines in the TEN-T network are being implemented and increase the competitiveness of these corridors, as well as of the Slovenian public railway infrastructure as a whole;	– Shift of transit transport flows to the parallel network through Italy, Austria, Hungary or Croatia due to unduly slow development of railway transport infrastructure; – Growing number of traffic jams and decreased level of safety in goods and passenger transport due to unduly slow network modernisation; – Accelerated deterioration of railway infrastructure due increasing traffic flows; – Unclear organisation structure for the management and development of investments (new constructions, upgrades, modernisations) and a lack of a clear funding model; – Unclear vision and development strategy and management of the railway network;

4.3. SWOT ANALYSIS OF ROADS

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
– Geographical position in the European area – With the completed motorway system Slovenia becomes internally connected and integrated in the European system of the motorway network, which will stimulate the emergence of new connections and development – Wide-spread road network; – Well-developed motorway network linked to neighbouring countries; – A high income share of road transport contractors in the European market; – Road transport tradition	– Dispersed population and often difficult terrain result in expensive construction and maintenance of road infrastructure which could meet needs for accessibility; – Dispersed settlements and the great scope of road infrastructure to be maintained; – Exposure of road infrastructure to natural disasters (floods, landslides); – Trunk, regional and local roads: partly inadequate technical elements, partly inadequate driving surfaces, partly deficient traffic safety measures (pedestrians, cyclists);	– TEN-T road network which also runs through Slovenia, integration of the secondary network into the TEN-T network; – Providing better road safety; – Functional roads with even greater accessibility	– Regression of the maintenance and development of the network of other state highways that will not be able to take over transport flows; – Increasing road traffic shortens infrastructure's life span; – Increasing road traffic loads also cause environmental costs to rise; – Further deterioration of road infrastructure – high maintenance costs of highly diversified road network.

4.4. SWOT ANALYSIS OF AVIATION

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
– Favourable geographical position (next to the motorway network); – Integration in the Pan-European transport network; – Proximity of regional centres; – Fast services for passengers, mail and goods;	– Small numbers of carriers; – Limited hinterland (population); – Poor accessibility of airports with public passenger transport (road, rail); – Reducing scope of transport; – High prices of services – Spatial and environmental limitations	– Capacities and infrastructure of international airports in Slovenia enable the transport of significantly more passengers and goods; attracting passengers from neighbouring countries; – Increasing the number of airport operators; – Increasing the scope of air transport; – Further transport development in the Middle and Far East; – Tourism: establishing new connections (charter) with growing emerging markets in Asia;	– Civil air transport is a threat in terms of the quickly developing competitive airport network in Slovenian border areas (Trieste, Venice, Klagenfurt, Graz, Zagreb, Pula); – Late adjustment of the airport's role and the national air carrier to market conditions and competition; – Changes in international standards, recommended practices and legislation (EU and SLO).

4.5. SWOT ANALYSIS OF THE MARITIME FIELD

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
– Exit to the high seas through the developed port; – Port of Koper - excellent starting point for the markets of the Middle and East Europe; – Recognised as a core TEN-T port and a part of priority CEF corridors Baltic-Adriatic and the Mediterranean (which provides the introduction of the Pan-European transport infrastructure network in the future which will be connected to the target hinterland markets); – Recognition of the port and a good reputation of the Port of Koper due to its reliability and adaptability of its services to the market needs (a good market positioning);	– Limited land accessibility of the Port of Koper through the Koper-Divača one-track line and other bottlenecks in the railway network; – Inadequate depth of entering canals at some locations which will have to be adjusted due to the trend of increasing ship dimensions; – Limited long-term possibilities of port area expansion due to urban and natural features; – High ecological sensitivity of the Adriatic;	– Further increase in cargo vessel traffic (consolidation of leading role in the Adriatic and car transport in the Mediterranean); – Growth of commercial activity of international trade of markets through the Suez Canal where the transport route to the Europe (through the North Adriatic Sea) can be a more competitive one; – Upgrade of the railway infrastructure to the Port of Koper and improvement of services of railway connections with hinterland markets; – Adoption of the National Spatial Plan with the possibility to increase the transhipment which defines the possibilities of a long-term port area expansion (possibility of the planning of a more optimum exploitation of the port area); – Cooperation of the Port of Koper with other North Adriatic ports (Venice, Trieste and Rijeka) – NAPA and the impact on the relocation of the transport from the North Sea ports; – Further development of the passenger transport in the port of Koper (complementarity and stimulation for the Slovenian tourist offer; – Possibility of increasing the offer of port services through the micro-distribution (added value services);	– Shift of vessel freight to other North Adriatic ports that will provide and adjust their capacities quicker (improve their offer which will be more competitive); – Shift of freight port transit to the North Sea ports because the ship-owners will have less stops in Europe due to the optimisation of their logistics; – Too slow adjustment of the Port of Koper infrastructure to the market needs (increasing dimensions of vessels, especially the container vessels); – Delayed or non-construction of the 2nd track and other modernisation of the railway system in Slovenia; – Impact of global logistics players and their interests (necessary integration in their sales networks / products);

4.6. SWOT ANALYSIS OF PUBLIC PASSENGER TRANSPORT

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
– Developed public transport in cities (LJ, MB); – Widespread network of rail infrastructure for the development of rail passenger transport as the main means for daily commuters to city centres (LJ, MB, etc.);	– Poorly developed and unconnected public passenger transport; – Dispersed population density and consequently expensive infrastructure which could fulfil the needs of public transport; – Great competition in private/road traffic; – Poor connections in shifting of transport modes – Low frequency of rush-hour transportation – Longer travel times on public transport; – Poor coverage of periods outside peak hours; – Lower responsiveness of the system to the needs of passengers and local communities and long delays; – Deficient harmonisation of timetables shifting of transport modes – Limited and partly unregulated parking at stations;	– Establishment of the system of a through ticket – public transport (road, railway); – Providing multimodality (walking, by bike, bus, train, P+R); – Disburdened road infrastructure; – Less competitive railway network and (compared to the road network) poor organisation of railway transport, shuttles; – Establishment of a more frequent timetable during morning, afternoon and night peaks for transporting more passengers; – Regulated legislation of public passenger transport; – Higher travel speed with public transport modes; – Closing city centres to passenger cars and thus providing the development of public passenger transport and increasing the number of pedestrian and cyclist areas; – Public passenger transport service for all generations and raising the level of awareness and the importance of public passenger transport; – Unified information portal – Harmonised timetable (rail, intercity and city bus transport); – Zone and destination system with a through ticket; – Funding of a greater number of P+Rs on the outskirts of larger cities of the Republic of Slovenia from EU funds; – Establishment of transport on call for a better offer in demographically endangered areas with sparse population; – Establishment of intermodal points with an additional offer which makes them more attractive and economically viable; – Improvement of the fleet of public passenger vehicles; – Providing sustainable mobility in the area of urban regions and at the national level; – Reducing negative transport impacts in terms of the environment and spatial planning; – Efficient public transport reduces external transport costs (the effect of reduced use of passenger vehicles and increased use of public transport); – Regeneration of city centres and service activities, higher pedestrian safety, calmer and quieter life in cities due to private vehicle traffic restrictions;	– Increased population dispersal; – Further increase in the use of passenger motor vehicles; – Continuation of a lack of connections between public passenger transport conductors; – Disloyal competition between carriers or the possibility of cartel agreements; – Non-harmonised timetables; – Use of public passenger transport only for persons without private passenger vehicles (pupils, etc.);

5. VISION, OBJECTIVES, MEASURES AND INDICATORS OF TRANSPORT DEVELOPMENT IN THE REPUBLIC OF SLOVENIA

5.1. VISION OF TRANSPORT DEVELOPMENT IN THE REPUBLIC OF SLOVENIA

The basic vision of transport development in the Republic of Slovenia as a whole and also for the different transport areas was prepared for the needs of the Strategy. The visions are not mutually exclusive, but complementary. This is why the basic vision is presented as it was prepared by the working group, while the visions by divisions are shown as detailed descriptions of the basic (short) vision.

5.1.1. Vision of transport development in the Republic of Slovenia

Every national transport policy has an important role in the country's general policy, since it enables the operation and development of society as a whole. An optimum transport system is a fundamental condition for a country's efficient operation, since it provides for the implementation of other country's policies and is also regarded as a precondition for economic development.

The transport policy vision is thus part of a common vision of a country and also a necessary condition for its operation. The transport policy vision is defined as the provision of sustainable mobility for the population and supply to the economy. The definition is derived from basic traffic and transport activity which entails moving or transferring people, goods and information in space and time. The word 'provision' means that a country will ensure the sustainable mobility of its population and sustainable supply to the economy by transport policy measures. The word 'sustainable' relates to the efficient operation of a transport system, which functions at the intersection of environmental, social and economic aspects. The measures at the intersection of environmental and economic aspects are implementable, but not necessarily socially acceptable; measures at the intersection of social and economic aspects are just, but not necessarily environmentally acceptable; measures at the intersection of the environmental and social aspects are tolerable, but not necessarily economically acceptable. The vision of transport policy strives to implement measures which provide sustainable mobility for the population and sustainable supply to the economy. The schematic diagram in the following figure shows all three aspects with interactions.

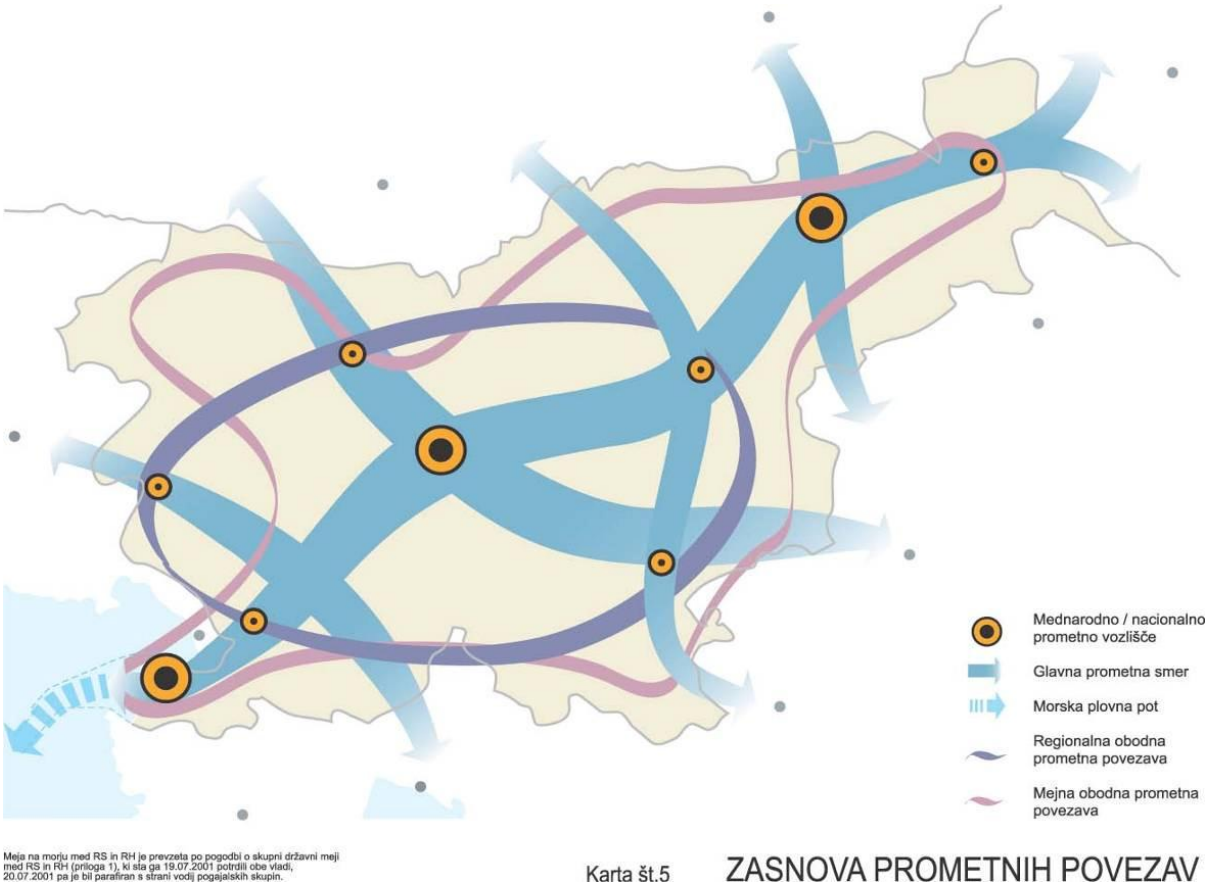
Figure 87 Schematic diagram of aspects of sustainable development

5.1.2. Vision of transport development in the Republic of Slovenia by divisions

Through the development of transport infrastructure, the Republic of Slovenia will implement its competitive strengths which arise from its transport position and natural and cultural features. In this regard Slovenia area implement solutions that establish it internationally as an attractive meeting and connection point, which will have important effects in tourism, logistics, science, diplomacy, sustainable agriculture and other activities.

With developed infrastructure, Slovenia will be equally integrated into all modern infrastructure networks: motorway, rail, maritime, river and air transport. Thus Slovenia will open itself to European and global transport flows. By doing this, it will also take on certain burdens of external costs due to increasing transport flows which, on the other hand, will be compensated with lower relative external costs due to the transfer of freight from road to rail. Also the positive effects of transport development will increase on the basis of reinforced passenger and freight flows and related transport activities.

From the Slovenian spatial development perspective, the main objectives of transport infrastructure development are to provide the population and the economy with access to functions (jobs, services) and support the development of economic activities, as well as to ensure accessibility or the connection of urban centres and functional and other border regions at the international level. This is why the transport network should be developed as a comprehensive transport system connecting all forms and types of transport.



Source: MInf, SDSS (Official Gazette of the RS, No. 76/04

Figure 88 Transport network scheme of the Spatial Development Strategy of Slovenia

If we are to attain these objectives, it is necessary to develop infrastructure systems that enable the connection and supply of all areas of the country and that are well linked to European infrastructure systems; support the development of a polycentric network of cities and other settlements and their quality development and residential and working potential; enable mutual complementation of functions of rural and urban areas, and contribute to the harmonious development of all the country's regions, including border areas. In this respect, all forms of transport infrastructure need to be considered so as to develop the most economically, socially, environmentally and spatially reasonable and efficient transport forms and flows as a priority.

As part of large European regions – Alpine, Mediterranean, Danube and Central European – Slovenia will take an active role and use its geo-strategic position, whereby the development of transport connections and infrastructure is of key importance.

In promoting the cohesion of a broader European area, the competitive position of Slovenian cities in the European urban network is being strengthened, while the efficient connection of Slovenian infrastructure networks to European infrastructure networks – *The Trans European Network* – transport and Pan-European transport corridors are provided for.

By developing transport infrastructure, the conditions for exploiting Slovenia's comparative strengths are established, while equal participation in designing cross-border regional and macro-regional connections is provided for at the same time.

The vitality of cities and other settlements where activities, work and residential areas are concentrated is important for Slovenia's successful development. Thus, they should be reasonably interconnected within the scope of regional areas and beyond. With their urban way of life, they cover the majority of Slovenian populated areas and connect urban centres into a polycentric network which, through an adjustable, comprehensively well-organised structure, can respond to the challenges of the economy and European competitiveness and at the same time provide sustainable development and a good quality of life. The network of railway and road connections which is functionally linked to the European transport network should be thus developed in line with the network of cities and other settlements. In this respect, the Port of Koper plays a special role, acting as our door to the world.

For the harmonious spatial development of Slovenia, the development of a polycentric urban system is promoted which forms a two-stage structured network of centres of national and regional significance to which the network of other centres is connected through an appropriate division of functions and interrelated transport connections.

The development of public passenger transport (complemented with non-motorised transport and, to a lesser extent, with passenger vehicle transport) needs to be planned in line with the development of urban areas and thus provide connections between cities and other settlements in these areas. Special attention needs to be paid to connections with public passenger transport between rural and urban areas in individual regions.

To increase traffic flow and accessibility, the development of intermodal transport connections and a railway network taking over the majority of long-distance freight transport in the future should be stimulated. Parallel to the construction of the Slovenian motorway network, the circumferential system of traffic routes should be developed in regard to needs at the regional level and upgrade and adjust the railway network to higher speeds to take on most long-distance freight transport.

In terms of spatial policy, railway transport and public passenger transport are developed as a priority while the development of all forms of non-motorised transport (cyclists, pedestrians) is emphasised in order to limit the negative effects of motorised road traffic on spatial development and the environment to the greatest extent possible. The integrity of the transport system needs to be provided with a functional connection of all forms of passenger and freight transport.

The vision of development in the field of transport already defined in the Resolution on Transport Policy of the Republic of Slovenia is divided into a vision of population mobility and a vision of supply to the economy.

The vision of population mobility states that the country is obliged to provide basic possibilities for the mobility of population. In the light of this, it must provide an integrated system of public passenger transport and its accessibility to users, including airports and

ports. To simulate and increase the use of public transport modes, the education of passengers is also necessary in order to develop passenger transport in an intermodal and sustainable way: walking, by bike, car, taxi, ship, bus, train and plane. Special attention needs to be paid to the elderly and persons with physical and sensory disabilities.

The vision of supply to economy indicates that Slovenia needs integral logistics services and the development of regional intermodal centres. Due to the growing volume of road transport and environmental problems it is necessary to stimulate a shift of freight transport from road to rail.

One possibility for this is a user charge on a commercial basis, while taking into account the marginal social costs (internalisation of external costs).

Parallel to this, the development of the Port of Koper needs to continue, logistics and business zones need to be established near airports and bottlenecks have to be eliminated in (especially the main) multimodal transport axes.

In the field of transport, special focus on traffic safety and the development of intelligent transport system use is required, in terms of population mobility as well as supply to the economy. At the same time, security, which is gaining importance with the increasing number of terrorist operations, must not be forgotten.

Transport with this kind of future orientation will contribute to Slovenia's economic development and its citizens welfare, as well as provide for the sustainable development of transport in the future.

Thus, we have to focus on three main objectives: constructing a competitive transport network, integrating public passenger transport and developing transport logistics.

The necessary support for road networks will be established through a policy of internalising external costs, whereby the user of infrastructure pays for a major portion of the external costs incurred by his activities. This, along with more competitive rail infrastructure and the liberalisation and modernisation of railway operators, will cause a shift of freight from road to rail. It is in the interests of the Republic of Slovenia to construct a rail network with a focus on the 5th corridor and thus provide transit and internal freight transportation and a more sustainable transport modes for passengers.

The necessary support for road networks will be established through a policy of internalising external costs, whereby the user of infrastructure pays for a major portion of the external costs incurred by his activities. This, along with more competitive rail infrastructure and the liberalisation and modernisation of railway operators, will cause a shift of freight from road to rail.

A more detailed description by individual areas of infrastructure development is given in the continuation of this chapter.

5.1.2.1. State roads for harmonised regional and urban development

To achieve development in the national road network which could be compared with the situation in the European Union, Slovenia will have to adopt certain systemic solutions related to the provision of earmarked funds for implementing the priorities of road development and maintenance measures.

Road infrastructure is a fundamental condition for harmonised regional development, the provision of optimum conditions for efficient economic operations and indirectly for the settlement of suitable areas in the country. This is why it is necessary to further develop the national road network (construct an optimum road network as well as maintain and upgrade the existing road network at the proper level). However, to provide harmonised regional development – economic as well as spatial development – to interconnect regions, improve transport service quality and eliminate bottlenecks, lower transport costs, improve traffic safety and reduce the negative impacts of transport on the environment, it is also necessary to take some further measures which have to include those development projects at the level of national roads the execution of which, on the basis of preliminary study, project and investment documents, will result in savings to national road users and residents in their vicinity, which will be economically justified. These are mainly projects related to new road construction, and the reconstruction of existing roads and bypasses which cannot be executed with budgetary means.

5.1.2.2. Five concepts of railway network development

The wider developmental goals of the programme pursue the joint objective of the sustainable development of Slovenia and are as follows:

- The preservation of the achieved level of competitiveness of the economy by shortening travel times and reducing transport costs.
- The harmonisation and/or guaranteeing of interoperability of the public railway network with the EU network.
- Better accessibility to individual regions and better interregional connection, linking parts of Slovenia that have not yet been connected appropriately to the main European railway corridors, thus enabling more equal distribution of the economic benefits of Slovenia's development.
- Improving traffic safety.

The wider goals of the development programme are determined by the basic development concepts:

- The concept of development of public railway infrastructure in the Republic of Slovenia;
- The concept of development of public railway infrastructure for the needs of transit and domestic freight transport;
- The concept of development of public railway infrastructure for the needs of suburban passenger transport;
- The concept of development of intercity and international passenger transport;
- The concept of development of fast long-distance transport;
- Common (network) strategic starting points for developing public railway infrastructure.

5.1.2.3. Development of maritime transport and inland waterway navigation

Maritime ports for international public transport in Koper, Izola and Piran as well as the river port for international public transport in Brežice (Obrežje) on the Sava River are being modernised and developed. Simultaneously, the development of facilities for the safety of navigation and facilities as well as devices for the supervision of the separate navigation system in the joint navigation chart for the Northern Adriatic in the area of the Gulf of Trieste, and facilities and devices for the supervision of the safety of navigation in the area of the river port near Brežice and the section of the Sava River between Krško and Obrežje, where the Sava international inland waterway is located, is being provided. Within the scope of the Port of Koper, a space for mooring 'ships in distress' has also been arranged. Appropriate space for the maintenance of vessels is also ensured around the ports (Koper, Izola, Piran).

The part of the Port of Koper which is functionally linked to the city is intended for the arrangement of the main passenger terminal for national and international maritime passenger transport. To stimulate national public and regular international passenger transport, the existing ports in Ankaran, Izola, Piran and Portorož are being developed and modernised; in Piran and Izola, activities could also include an upgrade to accommodate large tourist vessels for international passenger tranasport.

The Port of Koper is one of the most important strategic platforms in the Republic of Slovenia, since it is the main transport and logistics activities of national and wider regional importance. It has a distinctively favourable geographical position to supply the markets of Central and Eastern Europe, especially in relation to fast-growing markets through the Suez Canal (the Middle East, India, the Far East).

To improve the competitiveness of the Port of Koper relative to neighbouring ports, the timely construction of the new Koper-Divača railway track is especially important, along with the timely completion of operational wharfs for the transhipment of containers and vehicles and for the arrangement of hinterland storage areas.

The Sava international inland navigation route pursuant to the category of the navigation route between Sisak, Croatia and Obrežje, has been established with the construction of a hydro-power plants chain on the Lower Sava and navigation infrastructure (locks) on the River Sava section between Krško (Nuclear Power Plant Krško) and Obrežje. At the border between the Republic of Slovenia and the Republic of Croatia near Brežice, the river port is being developed for international freight and public river passenger transport, which, according to the given conditions, can develop at various locations.

According to the given navigation conditions, port infrastructure and regional navigation routes are being developed on rivers and natural or artificial lakes, while on sections of rivers such as the Mura, Drava, Kolpa and others which run along national borders, port and adequate navigation infrastructure for international river transport, especially of passenger and tourist vessels, can be developed pursuant to international treaties.

5.1.2.4. The development of public air transport infrastructure

Public air transport infrastructure will enable the development of civil aviation, closers connections with other commercial fields, especially tourism, and integration into the comprehensive transport network of the Republic of Slovenia, thereby attaining the goal and positive results of intermodality.

5.1.2.5. Sustainable transport logistics (freight transport)

Transport logistics includes planning and managing the supply chain in the widest sense possible. The more economical management of freight transport with minimum possible harmful effects on the environment as well as people and users of transport services must be attained. The use of existing public infrastructure, railways, roads, maritime connections, logistical and multi-modal centres as well as transhipment locations must be exploited to the maximum extent possible.

The maximum shift of transit flows to the railway and vessel transport has to be attained, whereby the structure of freight needs to be observed. This can be achieved through stimulating multimodality services. Subsidies for EKO goods vehicles have to be terminated and these funds reallocated to subsidies for the purchase of intermodal transport units and the stimulation of their use.

Transhipment points (terminals of combined transport) have to be adequately modernised and equipped in the short term. In the long term, the reasons for establishing new transhipment points which are to be located near their users have to be studied by taking into account the economic and environmental justification. No new construction of logistics centres is foreseen in the short term (centres with a free economic zone). The only centre currently operating in the scope of the Port of Koper has to be further developed and modernised.

Logistics centres and terminals for combined transport and transhipment locations are not part of the public transport infrastructure but pertain to the commercial activity of freight transport. By developing and modernising public transport infrastructure, appropriate and free access to their services must be enabled. This includes the modernisation of public road and rail infrastructure. Simultaneously, the economy and companies which own industrial lines have to be stimulated to modernise and start to use these lines where this is justified in economic and environmental terms.

Only through a combination of appropriate infrastructure and administrative measures and incentives can the goals of sustainable logistics services be attained.

Transport logistics

In the area of transport, most activities in Slovenia have been related only to the freight transport. If all the potential and advantages of transport activity are to be really exploited, more attention has to be given to logistics. This will create new high added value jobs. Logistics activity can produce a 14% share in GDP. Therefore, more private investments in

the logistics centres have to be provided in the future through public incentives. In this way, the more efficient exploitation of various transport modes will also be ensured.

Thus we have to pursue the objective of attaining synergies and promote or enable the development of logistics which create high added value jobs in the transport sector.

The advantage of Slovenia's geographical position is the proximity of fast-developing European regions acting as development generators. In this context, transnational and interregional cooperation plays an important role. Slovenian cities and regions can use this to improve their competitiveness in a wider area. Due to knowledge and understanding of conditions in the Western Balkans, Slovenia may participate in the processes of economic development of this area. Slovenia is also a hub of important European routes. The V and X Pan-European Corridors meet in Slovenia; they are linked to the more important centres in the urban system of the country (Koper-Ljubljana-Celje-Maribor and Jesenice-Kranj-Ljubljana-Novo Mesto). The entire transport network of Slovenia, including two sections towards Croatia, is also part of the integral TEN-T network, and also a major part of the core TEN-T network. Two corridors of the Mediterranean and Baltic-Adriatic core networks run across Slovenia. Here, Slovenia has not fully exploited its competitive edge so far, especially in the field of railways and logistics.

Thus, the vision of transport development pursues vital national interests and strives to attain three main objectives: the construction of a competitive transport network, integrated public passenger transport and the development of competitive transport logistics.

Intermodal infrastructure

Transhipment points (intermodal terminals and terminals of combined transport) have to be modernised and equipped, while the needs of new transhipment points which are to be located near their users by taking into account the economic and environmental justification have to be studied.

The intermodal infrastructure has to provide for efficient manipulation and added value in the supply chain at the crossroads of at least one transport mode. In general, there are four respective areas:

- Intermodal railway infrastructure with terminals and logistics centres;
- Intermodal maritime transport logistics with hinterland terminals and logistics centres;
- Air transport logistics with intermodal terminals and logistics centres;
- Road transport logistics with intermodal terminals and logistics centres which connect one or more of the above-mentioned transport modes.

Public and private sphere

In general, the public and private spheres have to be kept separate. Transport infrastructure, system management and the monitoring of operators are public matters, whereas the private sphere deals with the management of human and material resources, controls flows of material, and constructs logistics platforms. Both spheres are related to the economics of transport logistics on the one hand and supply chains on the other.

Logistics centres and intermodal terminals are thus do not necessarily form part of public transport infrastructure, but relate to the commercial (private) activity of transport logistics. By developing and modernising public transport infrastructure, appropriate and free access to their services must be enabled. Through participation in public-private partnerships, the

solutions can be devised quickly and optimally with a national or commercial initiative as an answer to the current needs and requirements. Only through a combination of appropriate infrastructure and administrative measures and incentives can the goals of sustainable logistics services be attained. The existing infrastructure needs to be exploited in planning supply chains and 'just-in-time' supply to the economy where industrial sources are related to public railway infrastructure; otherwise combined transportation is used to enable decision-makers in the economy to select the optimum transport modes, e.g. road-railway-road, 'door-to-door' road transport.

Modal shift measures (Shift of transport to more environment-friendly transport modes)

Measures to reroute transit traffic from roads to railways:

- Tolls for trucks in transit should include the charging of external costs; through a policy of internalising externals costs, where the user of infrastructure pays for a major portion of external costs incurred by his activities, necessary elements in road networks will be established which will enable a shift of freight from road to rail, along with a more competitive railway infrastructure and the liberalisation and modernisation of railway operators.
- Stimulating the application of intermodal transport units.
- Modernisation of intermodal terminals.
- Modernisation of public road and railroad infrastructure; apart from the internalisation of external costs, investments are necessary, especially in the construction of a competitive railway network, providing transit and internal freight and passenger transport in a sustainable manner. In general, the motorway network has already been constructed.
- Stimulation of commercial entities to reconstruct and re-use of industrial tracks.

In terms of transport flows and economic interests, there are potential areas in the Republic of Slovenia where logistics centres of varying importance and size could emerge. The areas in the Corridor V are: (Šempeter-Vrtojba, Sežana, Koper, Pivka, Ljubljana, Celje, Maribor, Murska Sobota, etc.) and some in the Corridor X (Jesenice, Brnik, Ljubljana, Novo Mesto, Brežice, etc.), as shown in Figure 9.

Green city logistics

Sustainable or green logistics in cities constitues a beneficial element in the supply of the economy, and also influences the way of life. The optimisation of supply chains in cities must not negatively affect the quality of life in cities.

Green city logistics systematically competes with other functions in the city, such as the living environment, shops, services, etc. given the historical circumstances, current factors and future plans. The public sector needs to revive the skills necessary for sustainable freight transport by providing a dedicated area for this type of service. This means introducing devices and tools into the complex system of city logistics with the cooperation of the public (city) and private (commercial) sector, and town and landscape architects. These three sets of factors come together in city logistics platforms, expressing and forecasting needs and solutions to these needs. The issue of increasing external costs, which is most evident in the quality of life in Slovenian cities, is related to noise, PM_{10} (air quality) and traffic jams. The impact of so-called green city logistics (supply chains and logistics centres) on the development of individual cities, along with the calculation of external costs, may also be seen through an analysis of the quality life in cities.

The objectives of accomplishing sustainable logistics in cities will be attained with:

- Improved transport efficiency (better exploitation of capacities);
- Intermodality (options of shifting transport modes);
- Good management of city needs in terms of the supply of goods; and
- Application of more environment-friendly vehicles and energy products.

Implementation activities

The focus in the implementation acts and projects will be on activities dictated by the good practice and government strategy and the strategies of local self-governments.

The organisation of logistics is based on economic and spatial criteria, whereby the optimisation of fright flows is conducted on the basis of data on production, consumption and infrastructure. The planning of infrastructure and capacity depend largely on the existing situation in transport and the market and on the potential of a certain area (city, country, etc.).

Definitively, transport logistics occupies space, creates transport and jobs and, apart from the environmental limitations (air quality (PM_{10}, etc.) and noise issue) is an important factor in strategic spatial and transport planning.

5.1.2.6. Public passenger transport and sustainable mobility

To provide sustainable mobility from the aspect of population mobility and the sustainable development vision, an effective system of public passenger transport must be established (hereinafter referred to as the PPT), the physical integration of transport sub-systems for the more effective implementation of public passenger transport services has to be ensured and the entire range of mobility management measures to reduce pollution caused by passenger vehicle transport must be implemented. The effects of measures of sustainable mobility are multi-layered, from health, environmental, spatial, and social to financial effects. This is a comprehensive approach to planning mobility development which takes into account all aspects of sustainable, environmental, economic and social development.

The need to reduce greenhouse gas emissions and rising oil prices in world markets have put mobility development planning in a completely new position. Settlements must be planned in such way as to depend less on passenger vehicles, while people have to be encouraged to change their travel habits, which in the long-term will lead to a better quality of life and greater transport safety.

Integration of transport subsystems

To provide the operation of an integrated PPT, it is necessary to integrate transport subsystems with a single ticket and intermodal transfer points, which will enable users to shift efficiently between different transport modes. The provision of modern transport centres will introduce a new dimension of sustainable mobility to local communities and increase the attractiveness of public transport. The PPT service should be comprehensively complemented with a Park and Ride system, an adequate number of covered/secured parking areas for bicycles and a system of pavements and cycle lanes for safe access to PPT stations. The arrangement of public passenger transport stations has to be in accordance with the Rules on bus stations (Official Gazette of the Republic of Slovenia, No.

106/11) and the Rules on railway stations and stop facilities (Official Gazette of the Republic of Slovenia, No. 53/02).

Improving conditions for pedestrians and cyclists

Access with non-motorised transport modes, walking and cycling as part of sustainable mobility are often neglected at the implementation level in Slovenian spatial planning practice. Therefore, they have to be guaranteed their role in contemporary transport planning. The continuous network of pavements and cycling lanes has to be created which will enable citizens to walk and cycle safely. By planning transport generators such as shopping centres with only road connections without pavements or cycle lanes, citizens are literally forced into bad travel habits and increasing dependence on motorised vehicles. At the same time, the groups of citizens who do not drive (minors, disabled persons, elderly, socially endangered persons, etc.) are placed in an underprivileged position in terms of accessibility. Safe accesses to PPT stations and stop facilities in the form of pavements and cycle lanes and the arrangement of cycle racks and projected roofs of cycle stands will provide sustainable mobility to the greatest extent possible.

Site planning of large transport generators

It is of great importance for a more efficient PPT to properly site plan larger transport generators along lines or in the vicinity of PPT stop facilities. Residential neighbourhoods, hospitals, shopping centres, education centres, faculties, stadiums and other facilities should be located near PPT stop facilities or lines and the required infrastructure for the PPT implementation should be designed in line with the site plan of such facilities.

Parking standards and parking policy

According to the existing transport infrastructure and developmental needs, it is necessary to study the measure of the Maximum Parking Standard. Cities in Slovenia and several other European countries prescribe minimum parking standards for new constructions which determine the lowest number of parking spaces in regard to the intentional use of the new construction. Some countries and cities started to adopt maximum parking standards due to transport issues, i.e. maximum number of parking spaces in certain settlements (especially their central areas) whereby they contain the growth of traffic at locations where traffic density is too high according to the criteria applied (environmental, infrastructural, etc.).
Through higher parking prices in city centres and lower prices on their outskirts in combination with an efficient Park and Ride network, city parking policies should prevent the over-density of cars in city centres.

Regional aspect of PPT planning

When planning the development of activities in an area, it is necessary to take into account the specifics of municipalities in terms of their location and size, while the system of public transport and measures of sustainable mobility should be planned in relation to neighbouring municipalities or at the regional level (provision of PPT to larger employment centres, education and care facilities, etc.).

Improvement of the PPT service

Constant monitoring of passengers' travel habits and needs is required for the planning of future passenger transport development. Thus, monitoring and research projects are implemented regularly.
The PPT service can also be improved through the existing transport system for elementary school children, which is being conducted as special line transport, and under specific conditions can also provide for the execution of public line transport. At the same time, all passengers, also other passengers, would also be transported, which would improve PPT service and permit more rational public expenditure at the municipal and national levels. Municipalities should study the spatial options for the integration of school and public line transportation and logically plan the required infrastructure for their implementation.

Upgrading and improving the management system of integrated public transport
PPT management has to be constantly adjusted to current needs in society and upgraded with efficient programmes and tools for its management and control and with a system for measuring its efficiency. For successful PPT system management, it is necessary to establish an operator that will operationally manage and control the subsystems of passenger transport on rail and inter-city bus lines and also provide integration with city passenger transport managed by municipalities.

Accessibility standard
The accessibility of public passenger transport needs to be evaluated in terms of distances to the closest public passenger transport stop facilities. Despite the principled guidelines about the siting of large transport generators as close as possible to PPT stops, at the implementation level new structures frequently have no alternative to access by motorised passenger vehicles. This gap can be bridged through the implementation of PPT accessibility standards.
The accessibility standard in terms of adequate PPT frequency needs to be provided to adjust timetables to citizens in accordance with their transport needs and ensure that PPT actually provides an efficient transport mode.

Guidelines on preparing a comprehensive transport strategy
An important aspect of sustainable mobility development is the preparation of comprehensive transport strategies at the municipal level which faithfully follow the principle of sustainable mobility. With guidelines, municipalities acquire a tool for comprehensively managing transport at the local level, in which public passenger transport will play an important role in the future sustainable transport system or by which the conditions are created for public passenger transport to exploit its potential in the complete offer of all transport modes.
Strategic and comprehensive transport planning goes beyond current planning practice, which is still unduly concerned with expanding road infrastructure capacity. The result is a lower quality of life and high public expenditure on the construction of road infrastructure.

The guidelines are available on the web pages of the Ministry of Infrastructure at the following link: www.MzI.gov.si/si/pomembne_povezave under the section, Project integrated public passenger transport/Project activity.

Educational and awareness-raising activities as support for changing travel habits
Education, information and raising ublic awareness of the importance of sustainable mobility are important in changing the travel habits of Slovenian citizens. Different measures and approaches need to be prepared to address the various public target groups. Some already tested and efficient models should be applied, such as European Mobility Week, for the general public and various didactic games, such as Traffic Snake and White Bunny, for schools and kindergartens, and the preparation of mobility plans for large institutions, the introduction of mobility centres and mobility advisers, etc. Efficient approaches lacking for other target groups have to be developed and implemented for the whole country.

Application of modern technologies to efficient mobility management
The attractiveness of public passenger transport depends on numerous factors. One of these is information on the arrival of PPT vehicle at stops. Information on the vehicle's location in real-time is important for the public passenger transport provider (control) as it is for the conductor of transport (vehicle fleet management).

Green PPT rolling stock
In order to reduce traffic congestion and the occupancy of car parks and provide a cleaner environment, a transport mode with public (green) cars needs to be tried out.
For public service of transporting passengers by road and rail, compliance with environmental standards should be considered upon the purchase of new vehicles.

5.2. OBJECTIVES OF TRANSPORT DEVELOPMENT IN THE REPUBLIC OF SLOVENIA

5.2.1. General Objectives

The general objectives of transport policy are determined on the basis of the vision. The objectives are as follows:

- Improvement of mobility and accessibility;
- Improvement of supply to businesses;
- Improvement of traffic safety and security;
- Reduction of energy consumption;
- Reduction of users' costs;
- Disburdening of the environment.

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

Objectives are harmonised with the objectives of the TEN-T ordinances on the technical specification for interoperability in terms of the 'infrastructural' subsystem of the Pan-European railway system for conventional speeds (2011/275/EU).

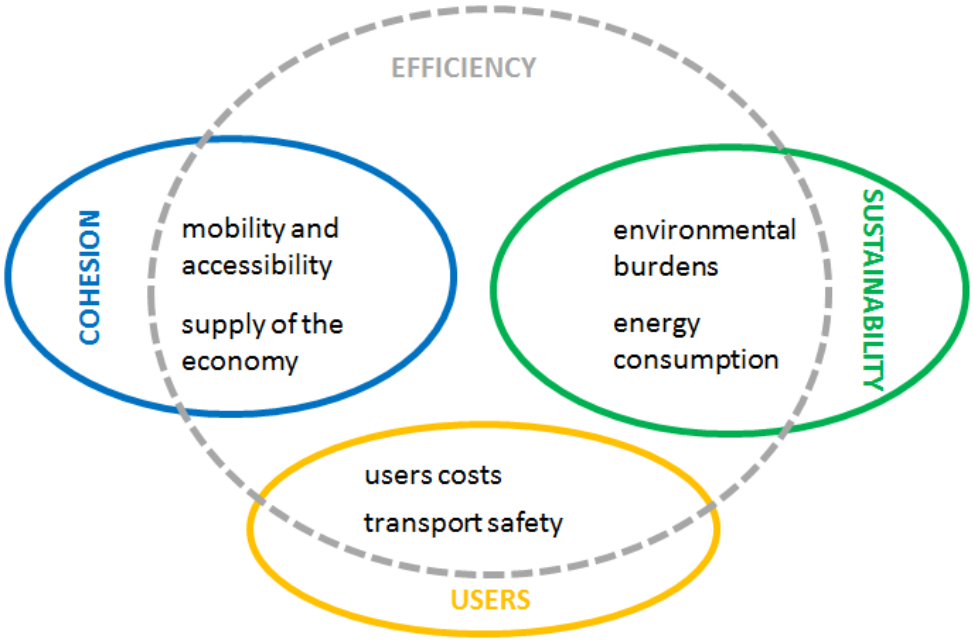


Figure 89 Schematic display of the harmonisation of general objectives with the objectives of the TEN-T ordinances

5.2.2. Specific objectives by transport mode

Railways:

The developmental programme objectives for railway infrastructure pursue the joint objective of sustainable development of Slovenia and are as follows:

- Increase economic competitiveness by reducing travel times, eliminating the bottlenecks and reducing transport costs;
- Harmonising and/or guaranteeing the connectivity of public railway network with the EU network;
- Improving accessibility to individual regions and better interregional connection;
- Improving the level of traffic safety;
- Reducing the environmental burden;
- More efficient traffic management;
- Reducing operating costs;
- Introducing interoperability;
- Observation of TEN-T standards (22.5 tons of axle pressure, speed of 100 km/h, electrification; ERTMS, length of trains up to 740m) at the core TEN-T network, where this does not cause disproportionately high costs;
- Observation of standards pursuant to the TSI at the entire TEN-T network.
- Provision of arranged and safe PPT stations and stop facilities.

Aviation:

- Provision of safe, regular and smooth air transport operations, which is in the public interest;
- Provision of the continuous development of standards, recommended practices and regulations in the field of aviation;

- Provision of the continuous development of aviation infrastructure and infrastructure of navigation air transport services;
- Provision of continuous and efficient supervision of the implementation of all civil aviation activities;
- Provision of connections between the country, industry and research and education institutes;
- Provision of adequate connections between airports and other infrastructure (roads, railway);
- Stimulation of the connection of the wider commercial environment with civil aviation;
- Provision of infrastructure for alternative fuels.

Roads:

- Reduction of travel times between regions;
- Elimination of congestions and bottlenecks;
- Improved traffic safety by eliminating the congestion points of traffic accidents and implementing the applicable national and EU legislation;
- Provision of an adequate and interoperable mode of toll service, pursuant to EU legislation;
- Improvement of the situation of the parallel national road network through planned maintenance;
- Provision of adequate and secure car parks on motorways, approximately every 100km;
- Provision of infrastructure for alternative fuels;
- Provision of arranged and safe PPT stations and stop facilities.

Maritime:

- Improvement of navigation safety by providing adequate technical and organisational conditions to implement control, and monitoring and notifications in maritime transport (e.g. the establishment of the VTS centre, provision of adequate facilities and qualifications of personnel, automation of navigation safety facilities, keeping of cartographic and hydrographic data, etc.);
- High-quality educational and qualification programmes for seafarers pursuant to the requirements of the STCW convention;
- Expanding port capacities and the scope of transhipment through the Port of Koper;
- Provision of adequate hinterland, especially rail, connections;
- Development of highways of the sea and stimulation of short-distance maritime transports;
- Increase of entries in the Slovenian Ship Register;
- Reducing administrative burdens and strengthening cross-sectoral cooperation by establishing a single window for maritime transport and other solutions for exchanging information on maritime transport;
- Development of inland waterways by connecting through the international Sava navigation way to European waterways;
- Provision of infrastructure for alternative fuels.

5.3. BASIC MEASURES IN THE FIELD OF TRANSPORT DEVELOPMENT IN THE REPUBLIC OF SLOVENIA

Based on the above-mentioned objectives, individual basic measures at the first level which enable the achievement of individual objectives are determined. The determined measures guarantee the fulfilment of various objectives, some of which complement each other, others compete; however, at the same time, they increase the level of fulfilment of each objective.

The basic measures are:

- optimisation of the public passenger transport system;
- raising awareness of the public and education:
- modernisation of the existing transport infrastructure;
- new construction of optimum transport infrastructure;
- provision of appropriate connections of the port with the hinterland;
- expansion and technological modernisation of the port;
- expansion and technological modernisation of airports and air transport navigation services;
- development of logistics centres;
- introduction of modern transport modes;
- provision of technical applicability of transport modes.

The relation between objectives and measures is shown in the Figure below, which indicates which objectives are fulfilled by individual measure. Thus, e.g. the measure “New construction of optimum transport infrastructure" fulfils all six objectives.

MEASURES \ OBJECTIVES		1 Improvement of mobility and accessibility	2 Improvement of supply to businesses	3 Improvement of traffic safety and protection	4 Reduction of energy consumption	5 Reduction of costs to users and operators	6 Reduction of environmental burdens
1	Optimisation of the public passenger transport system	■				■	
2	Raising awareness of the public and education			■		■	■
3	Modernisation of the existing transport infrastructure	■		■	■	■	■
4	New construction of optimum transport infrastructure	■	■	■	■	■	■
5	Provision of appropriate connection of the port with the hinterland	■	■			■	■
6	Expansion and technological modernisation of the port		■				
7	Expansion and technological modernisation of airports and air transport navigation services	■		■			
8	Development of logistics centres	■	■			■	■
9	Introduction of modern transport means			■	■	■	■
10	Provision of technical applicability of transport means			■		■	■

Figure 90 Objectives and measures matrix

The selection of all possible measures within ten basic measures will be prepared by individual transport types. How individual measures provide the fulfilment of individual objectives will be established on the basis of indicators prepared for individual objectives.

5.4. INDICATORS OF TRANSPORT DEVELOPMENT IN THE REPUBLIC OF SLOVENIA

The indicators of transport development in the Republic of Slovenia in terms of general objectives are as follows:

Objective 1 – Improvement of mobility and accessibility:
The indicators which define the improvement of mobility and accessibility of population are partly a result of a transport model and partly of the statistics, while at the same time also a result of individual measures, such as the number of vehicles/thousand inhabitants. All indicators for Objective 1 are to be increased in the monitoring period with transport policy measures.

Objective 2 – Improving supply to the economy:

- Length of sections with exceeded capacity [km]
- Number of locations with limited bearing capacity
- Number of private vehicles or motor vehicles/thousand inhabitants;
- Number of vehicles powered by alternative fuels/inhabitant
- Number of journeys/inhabitant
- Number of rides by bus/inhabitant
- Number of rides by train/inhabitant
- Number of rides by passenger vehicle/inhabitant
- Travel time/travel by bus [min.]
- Travel time/travel by train [min.]
- Travel time/travel by private vehicle [min.]
- Number of journey by bus [pkm]
- Number of rides by train [pkm]
- Number of rides by passenger vehicle [pkm]
- Number of bus rides [vehicle km]
- Number of passenger train journeys [train km]
- Number of passenger vehicle journeys [vehicle km]
- Total travel times of passengers [h]
- Number of inhabitants with up to 15 minutes accessibility to PPT station or stop facility
- Number of inhabitants with up to 15 minutes accessibility to MW junction
- Number of inhabitants with up to 30 minutes accessibility to regional centre - PPT
- Number of inhabitants with up to 30 minutes accessibility to regional centre – passenger vehicle
- Number of inhabitants with up to 30 minutes accessibility to regional centre
- Modal split PPT/private transport
- Share of passenger kilometres in rail transport
- Share of passenger kilometres in bus transport

Indicators should increase with efficient measures, e.g. GDP for a specific % per year. The GDP indicator is the result of statistic data and constitutes input data for the transport model, while the others are results of the transport model.

Objective 3 – Improvement traffic of safety and protection:

- Number of traffic accidents per year
- Number of lightly injured persons per year
- Number of major injured persons per year
- Number of deaths per year
- Number of protected car parks

All indicators for the improvement of traffic safety and security are projected to decrease in the monitoring period.

Objective 4 – Reduction of energy consumption:

- Fuel consumption – gas [litres]
- Fuel consumption – oil [litres]
- Fuel consumption – electricity [kWh]
- Used energy for ntkm [kWh]
- Used energy for ptkm [kWh]

All indicators to reduce energy consumption are projected to decrease in the monitoring period. The consumed energy of all transport modes will increase due to the scope of transport. However, the objective is for consumed energy per unit to decrease. This will cause transport costs to drop and have a positive impact on economic growth.

Objective 5 – Reduction of costs of users and operators:

- Time-related costs [EUR]
- Costs of energy use [EUR]
- Costs of vehicle maintenance [EUR]
- Costs of infrastructure maintenance [EUR]
- Noise costs [EUR]
- Costs of CO_2 [EUR]
- Costs of NOx [EUR]
- Costs of solid particles PM_{10} and $PM_{2.5}$ [EUR]
- Costs of traffic accidents per year [EUR–]
- Costs of measures for individual alternatives in [EUR]

The indicators defining users' costs are projected to decrease, especially costs per unit. Some indicators are a direct result of the transport model, while the others represent an economic category and have to be calculated on the basis of the interim results of the transport model.

Objective 6 – Reduction of environmental burdens:

- Noise load on road [dB/inhabitant]*)
- Noise load on railway [dB/inhabitant]*)
- CO_2 [t/year]
- NOx [t/year]
- Solid particles PM_{10} [t/year]
- Solid particles $PM_{2.5}$ [t/year]

On the basis of Objective 6 – reduction of environmental burdens, it will be possible to monitor the following indicators in the field of public health in the Republic of Slovenia:

- Number of patients and deaths from respiratory diseases;
- Number of patients and deaths from cardiovascular diseases;
- Number of patients and deaths from lung cancer.

6. AREAS OF DATA PROCESSING

The objectives and indicators which measure objectives are general and relate to the whole country. Some problems and measures are also general and relate to the whole country, while others are more specific and relate to concrete areas. This part is prepared by areas in order to find specific problems and their respective measures. The following figure shows seven functional areas for which specific problems are determined in relation to transport and transport infrastructure and their related problem-solving measures.

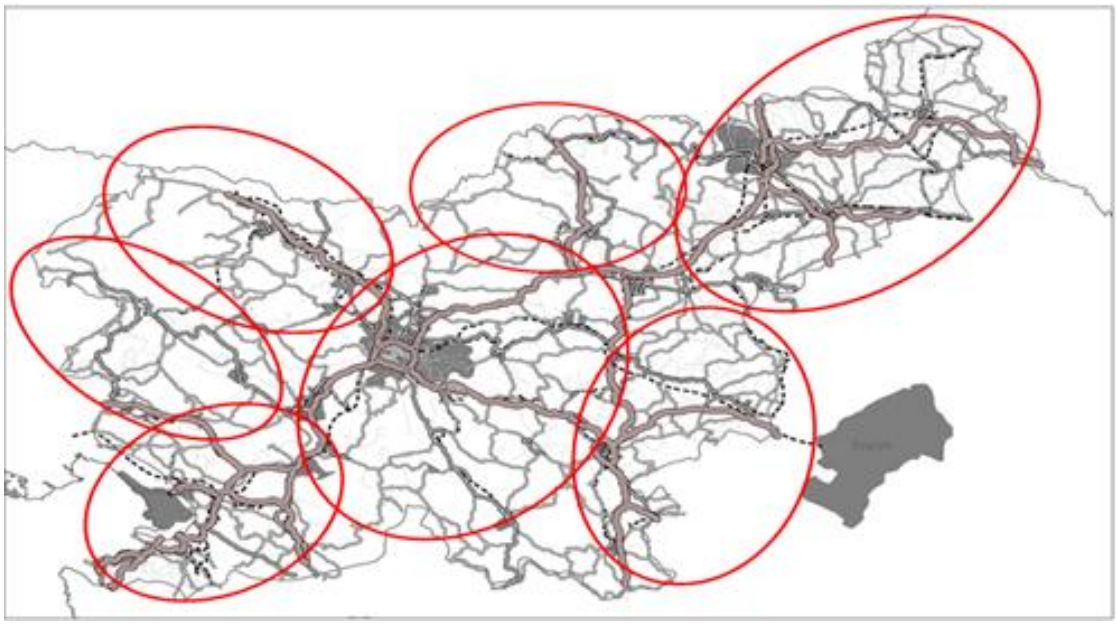


Figure 91 Traffic-gravitational areas for which specific problems and measures are determined.

Seven traffic-gravitational areas in general cover twelve statistical regions, whereby new administrative and other regions are not foreseen. Their purpose is especially to describe problems related to transport and transport infrastructure, and to determine measures.

1. North-eastern Slovenia comprises of two statistical regions, i.e. Štajerska and Pomurje. With its motorway connections the area is well connected to the international (TEN-T) as well as the regional network. The Pragersko-Maribor-Šentilj and Pragersko-Hodoš railway corridors are part of the core TEN-T network; thus it is important to provide a proper capacity and conformity with TEN-T standards. Suitable multimodal suburban and city connections have to be provided to the cohesion centre of Maribor.
2. South-eastern Slovenia covers the Spodnjesavska statistical region and part of the South-eastern Slovenia region (Bela Krajina). The main problem is the accessibility of the Bela Krajina area to the regional centre of Novo Mesto and the motorway network (third development axis).
3. North-western Slovenia encompasses the Gorenjska statistical region, whereby the area of Kranj and Škofja Loka is also closely connected with the capital city of Ljubljana. The main problem is mainly the Ljubljana-Jesenice single-track railway line, which is a bottleneck for freight transport and impedes the improvement of passenger transport

services. Problems also occur with the suburban connection of Škofja Loka to Ljubljana, tourist centres of Bohinj and Bled and the area of Cerkno.

4. The Goriška area covers the Goriška statistical region, where the accessibility of the River Soča valley to the regional centre of Nova Gorica and central Slovenia represents a great problem (fourth development axis).
5. The major problem of Koroška is its poor accessibility to the motorway network due to the limit of traffic flow being reached at some sections as one of the weaker characteristics (third development axis).
6. In the area of Primorska, the biggest problems are the traffic flow of the Koper-Ljubljana corridor for freight transport (especially the existing railway lines) and the connections to tourist centres and the Croatian border.
7. The area of the central Slovenia exceeds the statistical region since it also includes Notranjska, the area of Kočevje (3A development axis), Zasavje and Spodnja Štajerska (Celje) with their traffic flows mainly gravitating towards Ljubljana. The accessibility to Ljubljana (the Ljubljana motorway ring, suburban and regional connections) and the low level of public transport services are regarded as major issues.

7. MEASURES TO ATTAIN OBJECTIVES ON TRANSPORT DEVELOPMENT STRATEGY IN THE REPUBLIC OF SLOVENIA

On the basis of the foregoing analysis, objectives and definitions the specific objectives and measures were determined for their fulfilment by transport areas and the representation of the influence of measures on the specific objectives. This is shown in the continuation in four interdependent tables. All types of tables together represent the proposed transport development strategy, whereby the measures are not determined at the level of projects.

7.1. DETERMINATION OF GENERAL AND SPECIFIC OBJECTIVES OF THE STRATEGY

The strategy pursues six general objectives. For these six objectives, four specific objectives are assigned which more specifically determine measures to eliminate the problems. For each of the four specific objectives, the aspects and/or traffic-gravitational areas are identified where certain problems are to be solved. Every specific objective and their aspects and the areas to which it relates are adequately described to clarify which problem they are addressing.

Specific objectives and sub-objectives of the Strategy

- Specific objective no. 1: Improvement of transport connections and harmonisation with neighbouring countries:
  - Sub-objective 1a: Elimination of congestions at the border
  - Sub-objective 1b: Improvement of accessibility of international inter-city passenger transport (including transit traffic)
  - Sub-objective 1c: Improvement of accessibility of international inter-city freight transport (including transit traffic)
- Specific objective no. 2: Improvement of national and regional connections within Slovenia:
  - Sub-objective 2a: North-eastern
  - Sub-objective 2b: South-eastern
  - Sub-objective 2c: North-western
  - Sub-objective 2d: Goriška
  - Sub-objective 2e: Koroška
  - Sub-objective 2f: Primorska
  - Sub-objective 2g: Central Slovenia
  - Sub-objective 2h: Accessibility within regions (to regional centres)
- Specific objective no. 3: Improvement of accessibility of passengers to the main cities or agglomerations and within them:
  - Sub-objective 3a: Ljubljana
  - Sub-objective 3b: Maribor
  - Sub-objective 3c: Koper
- Specific objective no. 4: Improvement of organisational and operational structure of transport system for ensuring efficiency and system sustainability:

- Sub-objective 4a: Harmonisation of legislation, rules and standards with European demands and best practice
- Sub-objective 4b: Improvement of the organisational system structure and cooperation between respective stakeholders
- Sub-objective 4c: Improvement of the operative system structure
- Sub-objective 4d: Improvement of the transport system safety
- Sub-objective 4e: Environmental impact reduction/mitigation
- Sub-objective 4f: Improvement of energy efficiency
- Sub-objective 4g: Financial sustainability of the transport system

7.2. DETERMINATION OF MEASURES USED TO ATTAIN INDIVIDUAL SPECIFIC OBJECTIVES

A description and reason for the measure is given for all of the twenty-one sub-objectives of a specific group of measures, which are divided into general measures and measures related to the railways, roads, public passenger transport, air and maritime transport and urban centres. The measures are not represented at the level of concrete projects, but at the level of established needs (at the strategic level).

The left column of the tables shows to which transport means or area a specific measure relates. 'R' denotes railways, 'Ro' denotes roads, 'A' denotes air traffic, 'M' denotes maritime transport, and 'U' denotes urban centres.

7.3. DISPLAY OF MEASURES NEEDED TO ATTAIN INDIVIDUAL SPECIFIC OBJECTIVES OF THE STRATEGY

This shows the relation between measures and specific objectives. Green coloured cells mean that the measure definitively attains the specific sub-objective, whereas yellow indicates the attainment of the objective is not completely certain.

The table shows that all of the measures fulfil certain objectives and all measures fulfil all objectives.

7.4. TABLES DISPLAYING THE OBJECTIVES, SPECIFIC OBJECTIVES, MEASURES AND RELATION BETWEEN MEASURES AND SPECIFIC OBJECTIVES

7.4.1. Display of objectives, specific objectives and their aspects, and areas

OBJECTIVE (general and specific)	DESCRIPTION
GENERAL PURPOSE AND OBJECTIVES OF THE STRATEGY	**The general purpose of the plan is to achieve an efficient and sustainable system for passenger and freight transport in the territory of the Republic of Slovenia.** **The following general objectives, which are pursuant to the rules, standards and decrees of the European Union, will be taken into account in all the measures proposed in the plan to fulfil this purpose:** **- Improvement of mobility and accessibility;** **- Improvement of supply to businesses;** **- Improvement of traffic safety and security;** **- Reduction of energy consumption;** **- Reduction of users' costs;** **- Disburdening of the environment.**
SPECIFIC OBJECTIVES	
1 Improving transport connections to and harmonisation with neighbouring countries;	**Slovenia is an important transit country for passenger and freight transport and a country of origin and destination (for all transport modes concerned). The main objective is to provide a proper network capacity which will also meet the TEN-T standards (speed, axle load, length of trains) and to eliminate major congestions on state borders.**
1a Elimination of congestions on borders	The congestions at state borders during the tourist season (road to HR, AT) and single-track lines (AT, HU) and operational issues (IT) (railway line).
1b Improvement of the accessibility of international passenger transport (including transit traffic)	Capacity issues (the area of Ljubljana for transit transport, airport terminals), and issues related to the level of services (intercity passenger trains) for transit transport. Multimodal accessibility to the main network.
1c Improvement of the accessibility of international freight transport (including transit traffic)	Capacity issues (the Port of Koper, Koper-Ljubljana railway line, Ljubljana railway hub), compliance with TEN-T standards (where they are appropriate and economically justifiable). Issues remain, especially with the increasing importance of the NAPA ports (increase of transhipment). Multimodal accessibility to the main network.
2 Improvement of national and regional connection within Slovenia	**Ljubljana, Maribor and Koper are the main economic, political and administrative centres. Regional centres provide basic services in a particular region. Thus, better connections of all regions to these three major national centres is to be ensured (shorter travel time, level of services for public transport, better conditions of roads, where this is necessary), as well as proper services and accessibility within the scope of the region with its regional centre.**

OBJECTIVE (general and specific)	DESCRIPTION
2a North-eastern	The objective of the plan is to improve the connection of Pomurje to Maribor. North-eastern Slovenia comprises of two statistical regions, i.e. Štajerska and Pomurje. With its motorway connections the area is well connected to the international (TEN-T) as well as the regional network. The Pragersko-Maribor-Šentilj and Pragersko-Hodoš railway corridors are parts of the core TEN-T network, thus it is important to provide proper capacity and conformity with TEN-T standards. Suitable multimodal suburban and city connections have to be provided to the cohesion centre of Maribor.
2b South-eastern	The objective of the plan is to improve the connection of Bela Krajina (Črnomelj, Metlika) to Novo Mesto and Ljubljana. South-eastern Slovenia covers the Spodnjesavska statistical region and part of the South-eastern Slovenia region (Bela Krajina). The main problem is the accessibility of the Bela Krajina area to the regional centre of Novo Mesto and the motorway network (third development axis).
2c North-western	The objective of the plan is to improve the connection of Bled and Bohinj to Ljubljana. North-western Slovenia encompasses the Gorenjska statistical region, whereby the area of Kranj and Škofja Loka is also closely connected to the capital Ljubljana. The main problem is mainly the Ljubljana-Jesenice single-track railway line, which represents a bottleneck for freight transport, while passenger transport services also have to be improved. Problems also occur with the suburban connection of Škofja Loka to Ljubljana, tourist centres of Bohinj and Bled and the area of Cerkno.
2d Goriška	The objective of the plan is to improve the connection of Bovec, Tolmin and Cerkno to Nova Gorica and Ljubljana. The Goriška area covers the Goriška statistical region, where the accessibility of the River Soča valley to the regional centre of Nova Gorica and central Slovenia represents a great problem (fourth development axis).
2e Koroška	The objective of the plan is to improve the connection of Koroška to Celje and Ljubljana. The major problem of Koroška is its poor accessibility to the motorway network due to the limit of traffic flow being reached at some sections as one of its weaker characteristics (third development axis).
2f Primorska	The objective of the plan is to improve the connection of Ilirska Bistrica (the border with Croatia) to Postojna and Ljubljana. In the area of Primorska the biggest problems are the traffic flow of the Koper-Ljubljana corridor for freight transport (especially the existing railway lines) and the connections to tourist centres and the Croatian border.
2g Osrednjeslovenska	The objective of the plan is to improve the connection within the Osrednjeslovenska region to Ljubljana. The area of the central Slovenia exceeds the statistical region since it also includes Notranjska, the area of Kočevje (3A development axis), Zasavje and Spodnja Štajerska (Celje) with their traffic flows mainly gravitating towards Ljubljana. The accessibility to Ljubljana (the Ljubljana motorway ring, suburban and regional connections) and the low level of public transport services are regarded as major issues.
2h Accessibility within regions (to regional centres)	The objective is to increase (especially through general measures) the accessibility to regional centres. According to the objectives of the spatial development of the Republic of Slovenia, anyone should have an option to reach one of the urban centres in Slovenia in 45 minutes by PPT or at least with a passenger car.
3 Improving passengers' accessibility to the main city agglomerations and within them	**Ljubljana, Maribor and Koper are main economic, political and administrative centres. Thus, a better connection of all Slovenian regions to these three major national centres (shorter travel time, level of services for public transport, better conditions of roads, where this is necessary) is to be ensured on the one hand, while on the other hand these are the centres of three important Slovenian regions and thus a proper connection needs to be provided also within them. Ljubljana is also a hub of two Pan-European or TEN-T corridors (northwest-southeast and southwest-northeast or east-west and north-south), Maribor is a hub in the whole TEN-T EU network, whereas Koper is the location of the only Slovenian port and an important logistics centre or the origin of freight for Slovenia and central Europe.**
3a Ljubljana	The smooth flow of transit railway and road transport needs to be ensured in a manner which will reduce negative impacts on the environment to a minimum. What also needs improvement is the multimodal accessibility to the point of international, intercity and suburban passenger and freight transport with a focus on sustainable development. A sustainable city transport system has to be developed. The system of points for changing transport modes is to be established to provide a convenient and quick change between different transport modes. The central point of change of transport modes will be a passenger terminal which will act as a meeting point of international, intercity, suburban and city transport and where the change between all transport modes will be provided. A logistics centre has to be established which will provide transhipment between railway and road transport and also the development of supplementary activities.

OBJECTIVE (general and specific)	DESCRIPTION
3b Maribor	The smooth flow of transit, especially railway transport, has to be enabled. What also needs improvement is the multimodal accessibility to the point of international, intercity and suburban passenger and freight transport, with a focus on the sustainable development. A sustainable city transport system has to be developed. The system of points of change of transport modes is to be established to provide a convenient and quick change between different transport modes. A logistics centre has to be established which will provide transhipment between railway and road transport and also the development of supplementary activities.
3c Koper	In the direction of the border with the Republic of Croatia, the smooth flow of transit transport, which is problematic especially during the tourist season, needs to be provided. The railway connection of Koper to its hinterland has to be significantly improved. A sustainable transport system which will also provide environmentally acceptable accessibility has to be ensured in the area of the coastal region and within the city. The further development of the port and logistics centre has to be ensured where the transhipment between ship, rail and road transport is possible and where the further development of supplementary activities will be provided.
4 Improving the organisational and operational structure of the transport system to ensure the system's efficiency and sustainability	**One of the essential steps to improve the efficiency and sustainability of the transport system is to improve the organisational and operational structure. An inadequately organised and inadequately implemented and maintained transport system will not be successful regardless of the amount of financial means allocated for its development. A better sustainable system means not only better utilisation of financial means, but also a system which is safer, more energy-efficient and has less impact on the environment and society.**
4a Harmonisation of legislation, rules and standards with European requirements and best practice	To fully attain the objectives of new policy of Pan-European transport network, uniform requirements regarding the infrastructure have to be laid down and clear standards established for the infrastructure of the trans-European transport network. This will also include the application of smart mobility systems such as the air traffic management system for the future (SESAR), the European Railway Traffic Management System and railway information systems, systems of maritime control *(SafeSeaNet)* and information systems for vessel traffic management (VTMIS), intelligent transport systems (ITS) and interoperable, interrelated solutions for the next generations of management systems of multimodal transport and information systems (also for fee charging). More efficient, transparent and financially sustainable planning, management and implementation of public transport on the basis of the Public Service Contract pursuant to the Regulation No. 1370/2007 also falls under this aspect/vision. To release the potential of private funding, the regulative framework also needs to be improved and an innovative financial instrument introduced. The evaluation and approval of the projects have to be efficient and transparent to limit the time, costs and uncertainties.
4b Improvement of the organisational system structure and cooperation between respective stakeholders	Countries are still the most important entities obliged to form and maintain transport infrastructure. However, other entities, including partners from the private sector, also play an important part in implementing the multimodal trans-European transport network and its related investments, including regional and local bodies, infrastructure operators, concessionaires, managers, operators, etc. of ports and airports, navigation air transport services, etc. Better quality and higher efficiency/performance will be attained through their better mutual cooperation. Through better cooperation with the public, the integration of society and development of transport system, fulfilling the needs of users, will also be improved and provided.
	The improvement of organisational structure of the transport system and reorganisation of the structure of respective stakeholders for the optimisation of their means are necessary to improve the sustainability and quality of transport systems.
	To improve the monitoring of maritime transport and strengthen maritime supervision, it is necessary to consolidate the cooperation and exchange of information between the bodies involved in operational maritime supervision. The implementation of measures to consolidate this cooperation and the establishment of a common environment for the exchange of information (e.g. data on the locations of ships, data on freight, sensor data, maps and charts, meteorological and ocean data, etc.) will reduce managerial and operational costs of maritime transport activity, whereas the stakeholders will be equipped with more up-to-date and available information about conditions at sea. The improved coordination will enable better exploitation of technical means and exchange of information and data between individual bodies and sectors, as well as internationally. Thus, the duplication of data collection will be avoided and the more efficient operation of competent authorities at sea provided.

OBJECTIVE (general and specific)	DESCRIPTION
4c Improvement of the operational system structure	The quality, accessibility and reliability of the public transport services will gain in importance in the future, due to, inter alia, the ageing of the population and the need to stimulate public transport. The proper frequency, convenience, easy access, reliability of services and intermodal integration are the main characteristics of the quality of the service. The reliability of information about travel time and possible routes is equally important for smooth door-to-door mobility for passengers and freight. Human resources are a key component of every high-quality transport system. It is also generally known that the deficiencies in the work force and qualifications of workers will become a serious transport issue in the future. On the other hand, the improvement of operational measures and the strategy with the more efficient application of transport and the infrastructure of advanced systems for managing transport and information systems (e.g. ITS, SESAR, ERTMS, SafeSeaNet) are the main objectives for ensuring the sustainability of the sector. Proper maintenance of the existing transport network, capacities and vehicle fleet is very important for the sustainability and quality of the transport system. In this regard, the priority objective is to establish a system for proper maintenance.
4d Improvement of the transport system safety.	One of the main objectives of the plan is to improve the safety of the transport system/network by implementing measures in the entire network, such as checking/evaluating road traffic safety, ITS/TMS, traffic calming measures, measures to stimulate the application of public transport, etc.
	A centre for control and management of vessel transport (VTS centre) has to be established in the field of the maritime transport safety due to the outdated existing control system and unsatisfactory availability of radio communications. The grounds for establishing the VTS centre with proper technical equipment and control service organisation is also supported by the requirements of the Directive 2002/59/EC on the establishment of the system of monitoring and information for vessel traffic.
4e Environmental impact reduction/mitigation	Preventing, reducing or mitigating impacts on the environment due to transport-related activities is one of the main objectives of the plan. The strategy mainly aims at reducing greenhouse gas emissions related to transport (transport sector is one of their main causes), and air pollution. This will be attained through a set of measures in the field of habits related to mobility (modal shift to public transport and environmental-friendly transport modes, e.g. walking and cycling) and through the improvement of vehicle technology (more efficient and green). Preventing, reducing and mitigating (potential) impacts on the environment is important for the existing as well as new infrastructure. The protection of natural and constructed environments and landscapes, preservation of biotic diversity and ecosystem services, protection of heritage and ensuring a healthy environment (reducing the number of people affected by transport impacts such as noise and emissions) are necessary conditions for developing a sustainable transport network.
4f Improvement of energy efficiency	Better and more energy-efficient habits in regard to mobility are among the priorities of the European guidelines and plan. To attain this objective, a more efficient utilisation of the transport network has to be promoted; users should be especially stimulated to use public transport and environment-friendly transport modes. Also the use of modern, more efficient and greener vehicles has to be stimulated by observing the application of alternative fuels and providing sources of economic handling scrapped vehicles.
4g Financial sustainability of the transport system	One of the priority tasks of the European Union is to increase the financial sustainability of the transport system and reduce the needs for subsidies, which currently represent an important share of national budgets. The increase in financial sustainability will be attained though measures in the field of organisation and operation, i.e. with more efficient network management (attained by better planning - which will attract more users - and managing - e.g. with a public service contract, which would also allow a possible offer of service in the future, by which the transition to market economies will be provided). New financial instruments, e.g. the incentive for project bonds of the European Union, may to the greatest extent provide financial support for public-private partnerships.

When numbering the measures, we followed the principle that measures from 1 to 10 are related to network elements, measures from 11 to 30 are related to the network and 30 -> are organisational measures.

7.4.2. Description of measures through which the projected specific objectives will be attained by transport areas

7.4.2.1. The area of railways

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measure
Railway			
Elements of the railway network			
R.1	Koper – Ljubljana		The corridor, connecting Koper and Ljubljana to Eastern Europe is mostly used for freight transport. However, it also provides the possibility for international passenger transport at the section from Divača to Ljubljana. It is part of the Mediterranean and Baltic-Adriatic TEN-T corridor. To deal with the expected growth in needs for freight transport at the Port of Koper and similar economic growth, the capacity has to be increased. Koper is also the main Slovenian TEN-T port and one of the most important ports in the Adriatic Sea. In addition to the increased capacities related to the importance of the railway connection for freight transport, the railway network will have to fulfil the following minimum technical criteria: 22.5t of axle load, 750 m trains lenght, ERTMS, electrification. The basis for the project speed is 100km/h, but this speed will have to be confirmed according to the economic criteria in the scope of the feasibility study (together with the main parameters for the railway track, which will also determine whether a double track is necessary).
R.2	Zidani Most – Dobova (HR)		The section is a part of the Mediterranean corridor (MED) and core TEN-T network; it is mainly intended for freight transport, while partly also for passenger transport, which also has vast potential for growth. TEN-T standards have to be provided on this section, with the proper axle load, speed, electrification and capacity, whereas an upgrade will be necessary due to the train length requirement, i.e. 740m, and the ERTMS implementation.
R.3	Ljubljana–Jesenice (AT)		The section is part of the comprehensive TEN-T network. It is important for freight and at least over 2/3 for passenger transport (daily commuters). The capacity of the railway line has to be increased and upgraded to improve (quality) of services (speed, frequency of service, ERTMS, length of trains)
R.4	Ljubljana Railway Hub (LRH)		LRH is a crossroads of international transport corridors and the most important national transport hub. The increase in capacities is necessary to ensure smooth freight flows, as well as to improve public passenger transport services. Apart from the rearrangement (reorganisation) of the existing hub and extension of tracks, several bypasses for freight transport also have to be ensured in order that it bypass the main railway station.
R.5	Ljubljana–Zidani Most		The section falls under the Baltic-Adriatic (BA) and MED corridor and is a part of the core TEN-T network. It is intended for mixed transport. TEN-T standards have to be provided on this section for the core network, with the proper axle load and capacity, whereas the track is also electrified, whereas the upgrade is required to achieve a higher speed (100km/h), train lengths of 740m and ERTMS.
R.6	Divača - Sežana (IT)		The section falls under the Baltic-Adriatic (BA) and MED corridor and is a part of the core TEN-T network. It is intended for mixed transport. TEN-T standards have to be provided on this section for the core network, with the proper axle load and capacity, whereas the track is also electrified, whereas the upgrade is required to achieve a higher speed (100km/h), train lengths of 740m and ERTMS.
R.7	Pragersko–Hodoš (HU)		The section is a part of the MED corridor and core TEN-T network; it is mainly intended for freight transport and partly also for passenger transport; the track meets TEN-T standards (it will with the conclusion of the current investment) and for the time being provides a sufficient level of capacity, despite being a single-track line. The potential construction of an additional second track depends on the plans of Hungary and the increase in traffic flows.
R.8	Maribor–Šentilj (AT)		The section is part of the BA corridor and core TEN-T network; It is intended for mixed transport. It is a single-track line, where the capacities will have to be increased (also by constructing the second track); it should also be upgraded to fulfil the TEN-T standards (especially in terms of axle load of 22.5t, speed of 100km/h, train length of 740m and ERTMS).
R.9	Pragersko–Maribor		The section is part of the BA corridor and core TEN-T network; it is intended for mixed transport. The track capacity is appropriate, whereas the upgrade is required to fulfil TEN-T standards (especially in terms of axle load of 22.5t, speed of 100km/h, train length of 740m and ERTMS).

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measure
R.10	Zidani Most–Pragersko		The section is part of the BA and MED corridor and the core TEN-T network; it is intended for mixed transport. The track capacity is appropriate, whereas the upgrade is required to fulfil TEN-T standards (especially in terms of axle load of 22.5t, speed of 100km/h, trains length of 740m and ERTMS).
R.11	Postojna-Ilirska Bistrica-Šapjane (HR)		The section falls under the integral TEN-T network and is important especially for freight transport. The capacity of the track has to be increased and upgraded to a higher level of service, especially in terms of speed and frequency.
Railway network			
R.21	ETCS/GSM-R		The installation of the ETCS system on tracks which are not described in the previous measures would enable an increase in the interoperability of the entire network. Since the installation depends on the concept of operation, it would be possible to install ETCS and GSM-R on other tracks of the Slovenian network (in full and not only on the TEN-T network). Special needs and technical parameters for each case will be determined with additional studies (e.g. The 2nd level of ETCS).
R.22	Electrification		The electrification of regional railway lines would enable better efficiency of the existing infrastructure. With additional studies, special needs and technical parameters will be determined for each case.
R.23	Renovation, upgrade of other lines		By studying individual sections, the need for renovation and upgrade of tracks which are not included in the specific measures will be established, whereby the concept of operation as well as economic and environmental aspects will be taken into account.
R.24	Safety		Elimination of dangerous railway crossings: For this purpose, the legislation regulating this field should be amended. Which types of railway crossings can be determined as properly or improperly protected and therefore dangerous should be redefined. Then, on the basis of this the schedule has to be prepared for the elimination of improperly protected railway crossings.
Railway operation/organisation			
R.31	Reorganisation of railway access charges		Railway infrastructure charges may be used as a tool to improve the sustainability of the railway transport system. Railway infrastructure charges have to be proportional to emissions and therefore in accordance with the 'polluter pays' principle. The harmonisation of railway infrastructure charges with the railway administrations of neighbouring countries will facilitate international transport.
R.32	Multi-annual contract on the implementation of public service		The contract/contracts for the implementation of public service obligations pursuant to EU Regulation No. 1370/2007 are the basic tool for ensuring transparency and efficiency in the provision of public transport services. Therefore, the expanded implementation of contracts on the implementation of public service is not only necessary for the purposes of harmonisation, but also as the first step towards achieving better sustainability of the Slovenian transport system. The typology and duration of the treaty on the implementation of public obligations service have to be determined by the analysis of individual cases together with the applicability of its own model (which could be based on the issues of full conformity or on applicability after a thorough evaluation of technical and financial requirements).
R.33	Increase of financial sustainability		Greater financial sustainability is one of the objectives of the trans-European transport system. To attain this objective, it is necessary to optimise the organisational structure of the railway system and increase the efficiency of its operations and maintenance. The financial sustainability of the railroad transport system should reduce the dependence of the system on public subsidies. Further studies will evaluate the concrete measures necessary to optimise costs and income.
R.34	Improvement of the railway passenger vehicle fleet		To increase the competitiveness of railway transport compared to other transport modes, it is necessary to modernise the railway fleet in accordance with the foreseen improvements to the infrastructure. The first step in the development of this measure is a comprehensive analysis of current organisation, operation and maintenance structures of the railway operator and thus the future requirements and operation and maintenance plan. After establishing the actual needs, the specific technical requirements regarding the railway rolling stock will be defined on the basis of further studies.

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measure
R.35	Improvement of the railway freight rolling stock		Freight rolling stock consists mainly of standard closed and open carriages, with some of them being suitable for combined transport. The first step in the development of this measure is a comprehensive analysis of the current organisation, operation and maintenance structures of the railway operator and thus future requirements and an operational and maintenance plan. After establishing the actual needs, the specific technical requirements regarding the railway rolling stock will be defined on the basis of further studies.
R.36	Modernisation of legislation and planning guidelines		The legislation and planning guidelines related to the railway have to stimulate the development of the sector and should follow the best international practice and European regulations, especially those related to safety, interoperability, sustainability and environment. Establishment/stimulation of registered/competent bodies
R.37	Development of the concept for maintaining the railway network		The Republic of Slovenia has a widespread road and railway infrastructure and other infrastructures. The infrastructure enables the mobility of population and implementation of commercial activities. In recent years, operators have begun with various state measurements which are used to establish the real state of infrastructure quality. A computer-based system was introduced for some segments to provide continuous monitoring of the state and preparation of renovation plans on the basis of mathematical models. These systems enable an efficient management of the infrastructure and also assist the system to become financially sustainable in the long term. Systems based on real data on the state of infrastructure also enable more appropriate planning of the necessary financial means in the long term.
R.38	Reorganisation of operations/time schedules		To increase the share of rail transport, it is necessary to reorganise the schedule (clock-face timetable) for improving the interrelation and efficiency of provided services. Further studies will analyse this possibility by also observing the passenger potential and operation and infrastructure requirements.
R.39	Reduction of negative environmental impacts		The measures regarding the environment protection in the field of transport are mainly related to limiting increased noise (anti-noise fences, bunds). More concrete measures have to be defined in detail in the amendment to the operation programme of noise protection. Therefore, the focus should be on noise reduction at the source. The reduction of noise emissions will have to be also observed in the implementation of R.34 and R.35 measures.
R.40	Development of network into intermodal hubs, agglomerations in accordance with demand		The new TEN-T Regulation lists the following transport hubs in Slovenia: Ljubljana and Koper as hubs in the core part of TEN-T network, Maribor as a hub in the comprehensive part of the TEN-T network. It is these points that have the greatest potential for developing the logistics activity in the field of freight, while Ljubljana and Maribor also offer options for establishing multimodal passenger platforms. However, a wider (greater scope) approach to freight transport and the transition of passengers from one transport mode to another could also be provided in Slovenia. This would enable efficient combinations of various transport modes in a transport chain and thus increase transport efficiency. For this purpose, it is necessary to identify possible points of transition between various transport modes for passengers and freight in the future. Where it is proved necessary and efficient intermodal passenger platforms should be established to increase the utilisation of public passenger transport and provide a proper connection of freight logistics terminals with various modes of transport where the economic interest exists.
R.41	Recycling and application of waste in construction		Stimulation of recycling and application of own waste in the construction and reconstruction of transport infrastructure and also the application of certified construction materials from recycled by-products or waste material that are produced in other sectors (Decree on Green Public Procurement is observed). When applying construction materials for transport infrastructure which are not of primary natural origin, the fact should be taken into account that: this is an application of larger amounts of construction material, especially construction fills; some hazardous substances from waste materials are permanently mobilised, and thus new construction material could have better functional characteristics compared to the originally natural materials.
R.42	Preparedness for extreme weather conditions		In accordance with Article 41 of Regulation (EU) No. 1315/2013 in terms of climate change adaptation: Provide the preparation of the sensitivity analysis of the transport infrastructure to climate change, and on the basis of its result, implement measures and adaptations which properly increase the resistance of the infrastructure to climate change. The guidelines, methodologies and procedures for collecting information on extreme weather conditions and planning and implementing the measures to reduce the sensitivity of traffic infrastructure to the extreme weather conditions have to be developed.

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measure
R.43	Provision of migration corridors for wild animals and protection of drivers against collisions with wild animals		Provision of migration corridors for wild animals and protection of drivers against collisions with wild animals: When constructing the projected railway lines, the existing migration corridors of wild animals have to preserved by constructing proper structures of other crossing facilities (especially for large mammals and bats). For planning needs, the purpose study has been prepared in the first phase (or the results of already conducted studies, if available, are summarised); It includes data on species the migration of which will be affected by the intervention, and guidelines for the project designer for planning the facility or arrangement (location, form, size, greening of the facility and surroundings, etc.).
R.44	More accessible infrastructure for less mobile persons		Appropriate accessibility to infrastructure has to be provided for all users, i.e. more active involvement in terms of infrastructure adjustment in order to be more accessible for less mobile persons, such as: the arrangement of accesses from pavements to roads; the application of disabled-friendly public transport means; arrangement of public electric power charging devices, adjustments to wheelchair usage, etc.

7.4.2.2. The area of roads

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measures
Road transport			
Elements of the road network			
Ro.1	Draženci–Gruškovje motorway (HR)		The section is a part of the comprehensive TEN-T network. Several years ago, the motorway section was constructed between Slivnica ner Maribor and Draženci near Ptuj. The conditions on the current road network during peak hours on an average working day and tourist peak during the tourist season by 2030 were analysed. It was established that the traffic flow level will be exceeded by 2030; this is mainly a problem of traffic during tourist peaks, since the transport between Ptuj and the Slovenian-Croatian border runs along the two-lane main road. During this period, traffic congestion is heavier, which is an additional environmental burden. This is the only 13km long section between Maribor and Zagreb with no motorway; the section needs to be constructed.
Ro.2	Karavanke Tunnel		The section is part of the comprehensive TEN-T network. The current problem in terms of traffic flow relates to peak hours; congestion occurs; there are also traffic jams of a few kilometres on certain days; the traffic of trucks before the tunnel is limited or controlled due to safety reasons. Traffic flows are also increasing at tannually, potentially also causing a higher number of days and scope with heavy congestions, which is problematic for users (congestions, environmental burdens) and tunnel operator (provision of safety). There is no alternative to upgrading the single-tube corridor with a second tube to reach the full profile of a four-lane road. Traffic safety will be improved, which is pursuant to the provisions of the tunnel safety directive (Directive 2004/54).
Ro.3	Development of the concept of rest areas at the motorway network		In compliance with Article 19 of the TEN-T Regulation (No 1315/2013), the core TEN-T network defines priority tasks of Member States for the road infrastructure development. The Regulation, inter alia, foresees the provision of appropriate parking space areas for commercial users and with it the appropriate level of safety and security. The measure foresees the provision of infrastructure support on the number and free parking places and also the provision of additional capacities through the expansion of existing car parks and the construction of new ones if necessary.
			The integration of the Republic of Slovenia into the EU and adoption of the so-called Schengen Regime at the national borders meant that these border points had to be reorganised or given new functions. In the scope of the measure, it is necessary to prepare an examination and analysis of border points, establish their needs, define new changed functions and prepare reorganisation projects for these areas.
Ro.4	Connection of Bela Krajina to Novo Mesto		Individual areas of Slovenia have poorer connections to regional centres, or their accessibility is difficult due to lower travel speeds. The proper standard of accessibility has to be provided for centres of regional importance and for core centres and core or comprehensive transport network. The measure foresees the preparation of a project which includes the actual needs of the transport system. It is foreseen that the existing transport infrastructure is applied and reconstructed or upgraded to the greatest extent possible. This refers to interventions in the existing transport infrastructure; only in individual cases or locations where the proper standard cannot be ensured on the existing infrastructure, the option of the preparation of the project outside the existing transport infrastructure is studied.
Ro.5	Novo Mesto city network		The situation on the current 2030 road network during afternoon peak hours on the average working day was analysed. On some sections of the network traffic congestion and traffic jams occur which also result in excessive emissions in the residential environment. The prevention, reduction or mitigation of the impacts on the environment, especially in residential environments due to transport-related activities is one of the strategic objectives. The measure foresees the implementation of a by-pass road which will provide the proper conditions of traffic flows for long-distance transport and for source-target city traffic. The measure also improves conditions in the residential environment.
Ro.6	Connection of Bohinj and Bled to Ljubljana		The situation on the current 2030 road network during afternoon peak hours on the average working day was analysed. On some parts of the network, especially between the motorway and Bled, congestion and traffic jams occur. This is especially the case at tourist peaks and traffic peaks at weekends. The measure foresees the reconstruction of the existing road, which will provide the proper conditions of traffic flows for long-distance transport and for source-target city traffic and the construction of the southern Bled by-pass. The measure also improves the conditions in the residential environment.

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measures
Ro.7	Connection of Bovec, Tolmin and Cerkno to Ljubljana		Individual areas of Slovenia have poorer connections to regional centres, or their accessibility is difficult due to lower travel speeds. The proper standard of accessibility has to be provided for the centres of regional importance, as well as to core centres and core or comprehensive transport network. The measure foresees the preparation of a project which includes the actual needs of the transport system. It is foreseen that the existing transport infrastructure is applied and reconstructed or upgraded to the greatest extent possible. This mainly refers to interventions into the existing transport infrastructure; only in individual cases or locations where the proper standard cannot be ensured on the existing infrastructure, the option of preparing the project outside the existing transport infrastructure is studied.
Ro.8	Škofja Loka city network		The situation on the current 2030 road network during afternoon peak hours on the average working day was analysed. On some parts of the network, traffic congestions and traffic jams occur, which also result in excessive emissions in the residential environment. The prevention, reduction or mitigation of the impacts on the environment, especially in residential environments due to transport-related activities is one of the strategic objectives. The measure foresees the implementation of a by-pass road, which will provide proper conditions of traffic flow level for long-distance transport and for source-target city traffic. The measure also improves conditions in the residential environment.
Ro.9	Connection of Koroška to the motorway system		Individual areas of Slovenia have poorer connections to regional centres, or their accessibility is difficult due to lower travel speeds. The proper standard of accessibility has to be provided for the centres of regional importance, as well as to core centres and core or comprehensive transport network. The measure foresees the preparation of a project which includes the actual needs of the transport system. It is foreseen that the existing transport infrastructure is applied and reconstructed or upgraded to the greatest extent possible. This mainly refers to the interventions in the existing transport infrastructure; only in individual cases or locations where the proper standard cannot be ensured on the existing infrastructure, the option of preparing the project outside the existing transport infrastructure is studied.
Ro.10	Connection of Hrastnik to Zidani Most and Brežice		Individual areas of Slovenia have poorer connections to regional centres, or their accessibility is difficult due to slower travel speeds. The main road at this part is only a single-lane road, which means that only one-lane alternate traffic is possible. The proper standard of accessibility (two-lane main road) has to be provided to centres of regional importance, as well as to core centres and core or comprehensive transport network. At the same time the proper connection past Krško to Brežice also has to be ensured.
Ro.11	Connection of Kočevje to Ljubljana		Individual areas of Slovenia have poorer connections to regional centres, or their accessibility is difficult due to lower travel speeds. The proper standard of accessibility has to be provided for the centres of regional importance, as well as to core centres and core or comprehensive transport network. The measure foresees the preparation of a project which includes the actual needs of the transport system. It is foreseen that the existing transport infrastructure is applied and reconstructed or upgraded to the greatest extent possible. This mainly refers to interventions in the existing transport infrastructure; only in individual cases or locations where the proper standard cannot be ensured on the existing infrastructure, the option of preparing the project outside the existing transport infrastructure is studied. Apart from the existing road infrastructure, there is also the existing railway infrastructure in the direction of Kočevje. In the scope of preparing the measure, both modes of transport have to be observed. It also has to be established what concrete measures can meet the objectives of a faster and better accessibility. The focus of the study has to be on whether the improvement of railway infrastructure fully fulfils the objectives of a quicker and more efficient accessibility or whether it is necessary to seek the final proposal of measures in road and railway infrastructure by taking into account more efficient modes of public transport.
Ro.12	Motorway network around Ljubljana		The situation on the current 2030 road network during afternoon peak hours on the average working day was analysed. Congestion occurs on practically all sections of the Ljubljana motorway ring. By introducing public transport where a more prominent role would be ascribed to the railway in the main or regional directions, it is also expected that traffic will be reduced. However, due to the increase in mobility, the increased scope of the traffic is also expected, for example in 2030. It is foreseen that one part of this issue can be solved through the introduction of ITS services. If these measures fail to fully solve the problems, it is also necessary to draw up measures which provide the increase of capacities of the existing motorway sections and connecting AC segments. The existing infrastructure can be extended for an additional driving lane in each direction.
Ro.13	Connection Gorenjska–Štajerska		The connection between Gorenjska and Štejerska runs through Ljubljana with the motorway or expressway route in the northern part of Ljubljana. As a result, a great share of the traffic between Gorenjska and Štajerska runs through a longer route, which causes additional costs to the users. This traffic thus burdens the Ljubljana traffic ring and causes additional environmental burdens with its emissions. A direct connection between Gorenjska and Štajerska (Želodnik-Vodice) would shorten the distance between both regions.

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measures
Ro.14	Štajerska-Dolenjska connection		The connection between Štajerska and Dolenjska runs through Ljubljana by motorway. As a result, a great share of the traffic between Štajerska and Dolenjska takes a longer route, which causes additional costs to users. This traffic thus burdens the Ljubljana traffic ring and causes additional environmental burdens with its emissions. The existing roads of the Celje and Novo Mesto route do not provide a proper connection standard. A direct connection between Štajerska and Dolenjska would shorten the travel distance between both regions. The possibility of applying the existing infrastructure has to be studied. It will have to be modernised for speeds of e.g. 90km/h or on some sections 70km/h.
Ro.15	Connection of Škofja Loka/Medvode to Ljubljana		Škofja Loka and Medvode are considerable traffic generators, especially in terms of daily commuting. The daily traffic flows from this direction are especially heavy in the morning and afternoon peaks. The congestion occurs on the road between Ljubljana and Medvode, which result in higher costs for users and also cause additional environmental burdens. Some daily commuters have to be redirected to other transport modes, e.g. to public passenger transport, whereby it is necessary to study which organisational solutions (bus transport, railway transport) can meet the current and expected needs. Apart from the organisational solutions, the possibilities of an upgrade or completion of the existing infrastructure have to be studied for the railway (e.g. upgrade of the existing track, construction of the additional track) and roads (e.g. expansion of existing roads, potential shift of the existing route (by-pass).
Ro.16	Road network around Maribor		The situation on the current 2030 road network during afternoon peak hours on the average working day was analysed. The main problem is mainly the traffic in the southern part of Maribor, namely in the direction from the western part of Maribor and its hinterland towards the expressway and motorway. Traffic congestion and traffic jams occur on some parts of the network, which result also in excessive emissions in the residential environment. The prevention, reduction or mitigation of the impacts on the environment, especially in residential environments due to transport-related activities is one of the strategic objectives. The measure foresees the implementation of a by-pass road, which will provide the proper conditions of traffic flow for long-distance transport and for source-target city traffic. The measure also improves conditions in the residential environment.
Ro.17	Road network around Koper		The conditions on the current 2030 road network during afternoon peak hour on the average working day and during the tourist traffic peak were analysed. Traffic congestion and traffic jams on some parts of the network (in the Koper direction, Dragonja border crossing) which also result in excessive emissions into the residential environment. The prevention, reduction or mitigation of impacts on the environment, especially in residential environments due to transport-related activities is one of the strategic objectives. The measure foresees the implementation of a by-pass road, which will provide proper conditions of traffic flow for long-distance transport and for source-target city traffic. The measure also improves conditions in the residential environment.
Ro.18	Connection of Ilirska Bistrica (HR) to the motorway system		Ilirska Bistrica and its hinterland have currently a main road which is not a long-distance main road of the appropriate standard. Also, denser tourist traffic is detected in the direction from Postojna towards Croatia (Rijeka, western part of Istria, Kvarner) which is especially heavy during the tourist season. The traffic during peaks also reaches three to four times the density of the average. The connection from Postojna towards Croatia is also a part of the comprehensive TEN-T network. Traffic analyses indicate that the road in the current conditions does not meet the proper standard since it runs through settlements, part of the road has no proper elements, and also trucks traffic is limited. The measure foresees the modernisation of the existing infrastructure in order to provide the proper standard, traffic flow level of the existing road, e.g. for a speed of 90km/h or speed limits up to 70km/h. Furthermore, it foresees the study of shifting part of the railway line in the area of settlements, especially to separate long-distance traffic from internal or source-target traffic. Also, better traffic safety has to be ensured and therefore the solutions also need to include the separation of motorised from non-motorised traffic.
Ro.19	Celje city network		The situation on the current 2030 road network during afternoon peak hour on the average working day and during the tourist traffic peak was analysed. On some parts of the network in Celje, between the connections to the motorway and other network, traffic congestion and traffic jams occur which also result in excessive emissions into the residential environment. The prevention, reduction or mitigation of impacts on the environment, especially in residential environments due to transport-related activities is one of the strategic objectives. The measure foresees the implementation of a by-pass road, which will provide the proper conditions of traffic flow level for long-distance transport and for source-target city traffic. The measure also improves conditions in the residential environment.

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measures
Ro.20	Connection of Ormož to Ptuj/Maribor		Individual areas of Slovenia have poorer connections to regional centres, or their accessibility is difficult due to lower travel speeds. The proper standard of accessibility has to be provided for the centres of regional importance as well as to core centres and core or comprehensive transport network. The measure foresees the preparation of the project, which includes the actual needs of the transport system. This mainly refers to the interventions into the existing transport infrastructure; only in individual cases or locations where the proper standard cannot be ensured on the existing infrastructure, the option of preparing the project outside the existing transport infrastructure is studied.
Ro.21	Nova Gorica city network		The situation on the current 2030 road network during afternoon peak hours on the average working day and during the tourist traffic peak was analysed. On some parts of the network in Nova Gorica traffic congestion and traffic jams occur which also result in excessive emissions in the residential environment. The prevention, reduction or mitigation of impacts on the environment, especially in residential environments due to transport-related activities is one of the strategic objectives. The measure foresees the implementation of a by-pass road, which will provide the proper conditions of traffic flow level for long-distance transport and for source-target city traffic. The measure also improves conditions in the residential environment.
Ro.22	Connection of Kozjansko, Rogaška Slatina and the hinterlands to the central network		Some areas in Slovenia (e.g. Kozjansko, Šentjur, Rogaška Slatina, etc.) have poorer connections to regional centres or their accessibility is difficult due to lower travel speeds. The proper standard of accessibility has to be provided to centres of regional importance as well as to core centres and core or comprehensive TEN-T network. The measure foresees the preparation of a greater number of projects which observe the actual needs of transport system. This mainly refers to interventions into the existing transport infrastructure; only in individual cases or locations where the proper standard cannot be ensured on the existing infrastructure, the option of preparing the project outside the existing transport infrastructure is studied. The objectives mainly relate to improved and faster accessibility.
Road network			
Ro.31	Improvement of the accessibility of regions without a direct connection to the TEN-T network		The improvement of the regional network (road and railway network, if they exist) which will enable access to regional centres in a reasonable time.
Ro.32	Traffic management and monitoring system, traffic counts and information system		Traffic management is an important segment of a traffic system. Traffic data collection and processing is a basis for complementing the traffic database. Traffic counts are conducted in various manners, whereby access to data at the proper platforms, which are also publicly accessible, needs to be ensured. Functions of traffic control, management and operation form a basis for the optimisation of traffic flow levels. Efficient systems enable management which minimises congestion during regular traffic flow and during, for example, exceptional traffic events. The traffic model was developed in the scope of the preparing the traffic system development strategy in the Republic of Slovenia. The model has to be maintained and upgraded with new research studies (e.g. surveys of households, other research projects); its constant up-to-datedness is thus ensured.
Ro.33	Environmental protection and road safety		Measures regarding environmental protection in the field of transport mainly relate to limiting increases in noise (anti-noise fences, bunds). More concrete measures have to be defined in detail in the amendment to the operational programme for noise protection. In this regard the focus will have to be on two matters: a) that it is necessary to ensure the reduction of road traffic noise emission at source; in this regard it is necessary to prepare a more detailed strategy and technological solutions which provide for the efficient reduction of noise due to rolling; and b) starting-points have to be prepared defining in which buildings and in what way the renovation of noise insulation of critical facade elements should be carried out. In terms of road safety, crossroads and sections with high numbers of traffic accidents are determined on the basis of analyses of data on traffic accidents and terrain inspections. For these, a programme of measures is prepared which determines the immediate possible measures; short-term, medium-term and permanent measures to improve traffic safety, The national traffic model indicated that the road network in Slovenia requires the renovation of a great number of dangerous crossroads and numerous dangerous sections. Measures to improve motorway safety also need to include safety measures which efficiently prevent wrong-way driving and which have to be carried out in the shortest time possible.

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measures
Ro.34	Development of network into intermodal hubs, agglomerations in accordance with demand		The new TEN-T Regulation lists the following transport hubs in Slovenia: Ljubljana and Koper as hubs in the core part of TEN-T network, Maribor as a hub in the comprehensive part of the TEN-T network. At these points lies the greatest potential for developing the logistics activity in the field of freight, while Ljubljana and Maribor also offer options for establishing multimodal passenger platforms. However, also a wider (greater scope) approach for the freight transport and transition of passengers from one transport mode to the other could be provided in Slovenia. This would provide efficient combinations of various transport modes in the transport chain and thus increase the transport efficiency. For this purpose, it is necessary to identify possible points of passengers and freight transition between various transport modes in the future. Where necessary and efficient, the intermodal passenger platforms should be established to increase the use of public passenger transport and a proper connection of logistics freight terminals with various modes of transport provided where the economic interest exists.
Ro.35	Stimulation of the use of ecological vehicles and construction of a charging stations network		In EU institutions (EU Council and European Parliament) the discussion of the proposal of the Directive on the employment of alternative fuels infrastructure was concluded and the Directive was published in the end of this year. The Directive demands that Member States adopt their national strategies in the field of employing alternative fuels, namely: in the field of passenger vehicles, for electric vehicles, compressed natural gas and hydrogen vehicles; in the field of trucks for liquefied natural gas; in the field of maritime transport, for vessels on liquefied natural gas and for the electric charging of vessels from the land and in the field of aviation, for the electric charging of airplanes at airports. The Directive also sets deadlines for this, mainly by 2025, except for electric vehicle charging stations, for which the deadline is 2020. The Directive also lays down charging standards for this infrastructure. In regard to the environmental requirements at the national or EU level, it will be necessary to stimulate the purchase of electric and hybrid vehicles in order to provide at least 15% less traffic operations being conducted without GHG emissions in Slovenia by 2030. Financial incentives have to be projected which would stimulate individuals to purchase vehicles run on environmentally-friendly fuels (e.g. electric power, gas).
Ro.36	Internalisation of external costs		This is a tool of transport policy based on the European Directive on charging heavy trucks for the use of certain infrastructure (2011/76). The Directive lays down that the EU Member State has to introduce the charging of external costs at least for heavy goods vehicles above 11t (it could also introduce charges for other vehicles) if this measure is adopted. The congestion, air and noise pollution may be charged additionally. It is the inclusion of environmental costs related to the energy efficiency (quantity of CO_2/km) and clean vehicles (Euro standard) into the fee price for the use of public roads and parking areas if they are located in city centres. The implementation of electronic toll collection in free traffic flow is a condition for this.
Ro.37	Restrictive parking policy		To attain these objectives to reduce CO_2 emissions and pollutants, the efficient measures are as follows: a) reduction of milage covered by a passenger vehicle in the urban area; b) increase shares of pedestrians and cyclists in the modal split; c) increase in the share of public passenger transport in the modal split; d) increase the number of passengers in a vehicle used in urban environments, reduction of the fuel consumption per freight unit; e) improvement of energy efficiency of vehicles; among the measures, the reduction of passenger car milage is an efficient measure of restrictive parking policy with parking charges and the restriction of passenger vehicle parking areas.
Functioning/organisation of road traffic			
Ro.41	Modernisation of legislation and planning guidelines		The legislation and planning guidelines related to roads have to stimulate the development of the sector and should follow the best international practice and European regulations, especially those related to safety, interoperability, sustainability and environment. Establishment/stimulation of registered/competent bodies
Ro.42	Improvement of financial sustainability of road network and system of tolling		A stable funding source and establishment of electronic tolling

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measures
Ro.43	Development of the concept of road network maintenance (including the road reconstruction at the secondary and tertiary level)		The Republic of Slovenia has a widespread road as well as railway infrastructure and other infrastructures. The infrastructure enables the mobility of population and implementation of commercial activities. In recent years, the operators started to conduct various measurements of the situation which are used to establish the real state of the infrastructure's quality. Some segments, e.g. motorways, have implemented a computer-based system which enables the continuous monitoring of the road state and the preparation of reconstruction plans on the basis of mathematic models, supported by road surface deterioration curves. These systems enable the efficient management of infrastructure and also assist the system to become financially sustainable in the long term. Systems based on treal data on the state of infrastructure and provide the planning of necessary measures have to be introduced in other segments of infrastructure (other roads, railways, etc.).
Ro.44	Recycling and application of waste in construction		The stimulation of recycling and application of own waste in the construction and reconstruction of transport infrastructure and also the application of certified construction materials from recycled by-products or waste material from other sectors (Decree on Green Public Procurement is used). When applying construction materials for transport infrastructure which are not of primary natural origin, the fact should be taken into account that this is the application of larger amounts of construction material, predominantly as construction fills; some hazardous substances from waste materials are permanently mobilised and thus new construction material could have better functional characteristics compared to the originally natural materials.
Ro.45	Reduction of emissions and pollutants		Reduction of emissions and pollutants, e.g.: that a great focus is laid on emission gases inspection in the implementation of services to regularly control motor vehicle's state through roadworthiness tests; that the access or application of delivery by light goods vehicles be restricted in city centres if they fail to meet environmental standards applicable to new vehicles.
Ro.46	Preparedness for extreme weather conditions		In accordance with Article 41 of Regulation (EU) No. 1315/2013 in terms of climate change adaptation: provide the preparation of a sensitivity analysis of transport infrastructure to climate change, and on the basis of its result, implement measures and adaptations which properly raise the resistance of the infrastructure to climate change. The guidelines, methodologies and procedures for collecting information on extreme weather conditions and for planning and implementing measures to reduce the sensitivity of traffic infrastructure to the extreme weather conditions have to be developed.
Ro.47	Provision of migration corridors for wild animals and protection of drivers against collisions with wild animals		Provision of migration corridors for wild animals and protection of drivers against collisions with wild animals: eduction of the fragmentation of habitats of species by establishing the passages for wild animals on existing traffic routes (especially for species from groups of mammals and amphibious animals). For this purpose, first a study is conducted or data from the monitoring of wild animals being run over are summarised. Then, based on the study findings, facilities for the migration of wild animals are established. In the scope of the measure the priority list of black spots where amphibians are run over is prepared where crossing facilities are arranged, including redirecting fences. To provide better traffic safety (to prevent collisions with large mammals), it is possible to set up chemical deterrent devices, acoustic warning devices, light reflectors and combined devices on unfenced traffic routes depending on location and traffic density. In newly planned traffic routes, the preservation of existing migration paths with the construction of proper facilities and other arrangements preventing the wild animals movements (especially for species from groups of animals, roe deer, red deer, bats and amphibians) has to be provided for. For the needs of planning the purpose study is prepared already in the first phase (or the results of already conducted studies, if available, are summarised) which includes data on species the migration of which will be affected by the intervention, and guidelines for the project designer for planning the facility or arrangement (location, shape, size, greening of the facility and surroundings, etc.).
Ro.48	More accessible infrastructure for less mobile persons		Appropriate accessibility to infrastructure has to be provided for all users, i.e. more active involvement in terms of infrastructure adjustments in order to be more accessible for less mobile persons, such as: the arrangement of accesses from pavements to the road, the application of disabled-friendly public transport means, the arrangement of public electric power charging devices, adjustments to wheelchair use, etc.

7.4.2.3. City traffic area

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measures
Urban traffic			
Elements of the city network			
U.1	Kamnik–Ljubljana corridor		It is one of more important radial roads of the capital city of Slovenia with high traffic density, especially in the form of daily commuters. Also public passenger transport is widely spread. However, it could be improved, especially in the field of railways. This will be done through the increase of capacities and quality of passenger transport services. The double-track line (or at least a partial double-track line) has to be ensured for this purpose to enable a clock-face timetable and electrification.
U.2	Kranj–Ljubljana corridor		The section is an important Ljubljana radial road with a considerable number of railroad passengers. This is why there is already a shortage of capacities for the transportation of all potential passengers. To improve this, it is necessary to provide at least a double-track line to enable a clock-face timetable. This will be carried out within the scope of the construction of the 2nd track between Ljubljana – Jesenice.
U.3	Grosuplje–Ljubljana corridor		It is one of the important radial roads of the capital city of Slovenia with high traffic density (daily work commuters), but mainly with passenger vehicles (by motorway). Public passenger transport, especially by rail, could also be improved with specific measures at this section. This will be achieved through the increase of capacities and quality of passenger transport services. The double-track line (or at least a partial double-track line) has to be ensured for this purpose to enable a clock-face timetable and electrification.
U.4	Connection of Ljubljana to the airport		Ljubljana Jože Pučnik Airport does not have the proper connections regarding public passenger transport to the capital city of Ljubljana. Thus, it will be reasonable to consider more adequate bus connections (direct lines and not lines through the surrounding towns, e.g. Airport-Ljubljana direct line) or an adequate rail connection. The latter could be implemented together with the construction of the Ljubljana – Jesenice 2nd track, if it is decided to project the track past the Airport. If this is not reasonable or justifiable, the option of the railway connection becomes justifiable, if the airport has over 3.5 million passengers/year.
City network			
U.11	Ljubljana P+R (park and ride)		Ljubljana is the largest Slovenian city and the capital, and has the most commuters. They could be provided with more convenient and better commuting services through the introduction of a P+R system. The car parks are directly connected to the capacities of public transport which provides users with direct access to the city centre in an environment-friendly way. Users avoid a stressful journey through congested city streets, while the city is disburdened from the passenger vehicles and their negative consequences - from the overcrowded streets and parking lots to the pollution and general degradation of the environment. 25 P+R's are projected for Ljubljana.
U.12	Maribor P+R		Maribor is the second largest Slovenian city, with a considerable number of daily commuters. They could be provided with more convenient and better commuting services with the introduction of a P+R system. The car parks are directly connected to the capacities of public transport which provides users with direct access to the city centre in an environment-friendly way. Users avoid a stressful journey through congested city streets, while the city is disburdened from passenger vehicles and their negative consequences - from the overcrowded streets and car parks to the pollution and general degradation of the city centre. 6 P+R's are projected for Maribor.
U.13	Slovenia P+R		Slovenia is a very specific country in terms of population distribution. It has around 6000 settlements; translated into acreage this is 20,273 km^2 and in terms of population, approximately 2 million. Thus, the application of P+R is shown as a suitable way to stimulate the use of public passenger transport. It combines car parks with public transport stop facilities, which enables users to drive their vehicles to more important points on the outskirts of the city or to main radial roads, where they board public transport or rent a bicycle. The potential points for the P+R locations were shown in the traffic model. However, an in-depth study will have to be conducted to make a more detailed plan of their positions. In general, 72 P + R's are planned to be constructed in Slovenia.

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measures
U.14	Development of stations		Through a proper analysis of the existing state and the expected development of the traffic system and social and economic circumstances in city and regional areas – from the aspect of sustainable mobility/integrated public transport plans - it will be possible to recognise the need for reconstruction/upgrade of stations or their new constructions where this is justifiable in terms of the level of mobility. On the other hand, this could also mean the cancellation or functional degradation of some existing stations where expected levels of mobility become irrelevant. The development of stations will be focusing mainly to improve accessibility for passengers, especially for persons with reduced mobility, through which passenger safety will be ensured along with the introduction of information systems and systems for public communication.
U.15	Separation of traffic types – giving priority to public transport, elimination of congestions		Public city transport (buses and possibly the light railway) has to coexist with passenger vehicles since the space in cities is always limited. At the same time, more attention will be paid to public transport and the restoration of urban areas to be used by citizens again. In this regard and to increase the efficiency of public transport, the level of separation of private and public transport will increase with the construction of driving lanes for public transport and/or corridors reserved for public passenger transport (buses and possibly the light railway) and carrying out the measures providing the right of way for public transport through traffic management elements, such as traffic lights. In addition, the established obstacles and bottlenecks will be removed which hinder efficient public transport flow. These obstacles and bottlenecks cause delays to public transport and can even jeopardise road traffic safety (e.g. level crossings).
U.16	Increase of intermodality (P+R, etc.)		One of the key aspects in establishing good public passenger transport and for the success of integrated transport systems which stimulate the shift from private to public transport is the increase in, and facilitation of, intermodality. Thus, together with the development of proper intermodal terminals, the development of infrastructure, such as Park & Ride, Kiss & Ride (combination of delivery of passengers with passenger vehicles and public transport), Bike & Ride, etc. will give commuters additional options for accessing the city, which will avoid the traffic jams in central city areas and stimulate the use of public transport. The location of this infrastructure will be analysed in detail on the case-by-case basis, whereby functionality will be taken into account, e.g.: “Park and Ride” is usually located on the city’s outskirts, next to public transport terminals.
U.17	Cycle network		It is necessary to prepare a plan for the organisation and classification of national and sub-urban cycling routes. The priority task should be the connection of already constructed cycling sections into larger closed units, provision of a higher standard or level of services for cyclists, additional reduction of the number of traffic accidents involving cyclists (the "zero" vision principle which is applied abroad) and construction of local cycling connections which are linked to national cycle network and provide cyclists with greater mobility. The final long-term plan period foreseen for the construction of the entire network is 25 years. The construction will be conducted in phases. Investments in the construction of national cycle network have to be balanced according to the individual projected short-term, mid-term and long-term planning stages. The economic planning of measures is necessary according to the financial and spatial possibilities and available road infrastructure. It is reasonable to use as many existing roads with low average annual daily traffic as possible which have to be reorganised or equipped with traffic signalisation for the safe operation and management of cycle traffic. The construction of new cycling routes is foreseen only for locations with no other option. The construction of cycling routes and cycling lanes is foreseen especially in settlements and where it is really necessary from the aspect of traffic safety.
Functioning/organisation of urban traffic			
U.31	Introduction of single ticket		One of the most tangible benefits for users of integrated transport systems is the introduction of integrated tariff systems. The level of integration of tariff system and types of tickets and technologies which will be used (single tickets and/or electronic tickets, smart cards contactless payment, etc.) will be analysed in a case-by-case approach on the basis of the competence of the relevant transport body and by taking into account all possibilities, such as the options of using smart cards for P+R payment, parking in the street, tolls, etc.
U.32	Introduction of on-demand public transport services		One of the main objectives of the strategy for transport development is to increase the sustainability of the transport system and provide solutions for public transport at the same time which will be accessible to the majority. By taking into account that there is insufficient demand in some parts of Slovenia to justify the introduction of regular public transport lines (e.g. rural areas or areas of dispersed population), the introduction of public transport services on demand will provide the option of public transport services also being available at the above-mentioned areas.

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measures
U.33	Adjustment of timetables (harmonised)		To increase the share of public transport in city, suburban and regional transport, timetables have to be harmonised to improve the connectivity, efficiency and coordination of various transport modes. Further studies will analyse this possibility by observing the passenger potential and operational and infrastructure requirements.
U.34	Administrative capacities and training		The introduction of integrated transport means and new technologies together with the need to increase financial sustainability and efficiency leads to the definition of the lack of administrative capacities and adequately trained personnel as one of the key issues in this sector and at the same time as one of the priority tasks of the EU cohesion policy. The application of additional administrative capacities is important in this sector especially in terms of creating new jobs responsible for integrated transport systems and project preparation and control. The introduction of new technologies means that existing and new personnel have to be trained to provide the proper operation and maintenance of these systems.
			Due to the close connection between city, suburban and regional transport with zero emissions and users of passenger vehicles, training on the safe use of various transport modes will be conducted in combination with educational programmes for users.
			The programme of training and education has to be, inter alia, developed to:
			- increase the capacities and competences of administrative personnel;
			- train the personnel of various carriers in cost-efficient and safe driving and communication with passengers;
			- train students in the use and safety of bicycles and public transport;
			- to raise public awareness of safe driving and efficient and safe use, as well as the advantages of public transport, with an emphasis on vulnerable groups (e.g. the disabled and the elderly).
			The programme will be based on case studies and examples of good practice. In this way, it will provide a dynamic and permanent education.
U.35	Vehicle fleet modernisation		Apart for some exceptions, the current vehicle fleet of public transport is old and based on out-of-date and inefficient technologies. To raise the level of competitiveness of public transport compared to private passenger vehicles, the vehicle fleet has to be modernised. At the same time, it has to meet all the quality, safety and environmental standards and be accessible to persons with reduced mobility. The modernisation of the vehicle fleet will be carried out, together with projected improvements to infrastructure. The first step in developing this measure is a comprehensive analysis of the current organisation, operation and maintenance structures of the respective operators and an analysis of future requirements and operational and maintenance plan. After establishing the actual needs, the specific technical requirements regarding the vehicle fleet will be defined on the basis of further studies.
U.36	Information platform		Raising public awareness of administrative efforts and the advantages of public transport is important for the successful implementation of other measures. Promotion groups will be organised to raise awareness of the adopted measures; these will include traditional public media, advertising, public workshops and the establishment of special information platforms which will also operate as public forums.
U.37	Support to non-profit groups in the field of transport		Non-profit groups promoting the use of alternatives to private passenger vehicles proved very successful in numerous cities across Europe. There are also groups which stimulate the daily use of bicycles, groups which advocate passengers' rights, maintenance of pedestrian zones or even traffic control. These groups (neighbourhoods or groups with joint interest, non-governmental organisations, etc.) can assist local administrations and bodies in their tasks and the promotion of the use of public transport. For this reason, the cooperation of such associations, local communities and non-governmental organisations have to be stimulated and taken into account in decisions related to the transport planning.
U.38	Management and information on transport and logistics		Among other things, new technologies also enable the collection of data and monitoring of traffic conditions and the use of public transport in real time. To apply these new technologies, centres for the centralised management of public traffic will be established and equipped with the state-of-the-art IT solutions. New public transport vehicles will be properly equipped; IT platforms will be used for routing, while traffic signalisation will be updated and integrated into the centralised control system (e.g. "smart traffic lights" or measured for yielding the right of way to public transport). In this way, quality will improve in the planning and monitoring of public transport, user information for passengers, traffic control and data collection on traffic jams and arrivals of public transport vehicles in real time.

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measures
U.39	Review/update of local/regional core plans for transport		In regard to traffic planning obliqations, the functional regions and/or cities will have to develop proper plans for sustainable mobility in the cities (mobility plans can cover the area of one or several combined cities (functional regions)). These mobility plans will facilitate an analysis of the current state of the traffic systems, not only from the infrastructural, but also from the operational and organisational aspects, while on the basis of analysis results, future needs will be defined. The existence of these plans is a precondition for investments in the public transport systems. These mobility plans have to be examined and updated; they have to be in accordance with high-level planning instruments, such as the transport development strategy .
U.40	Reduction of emissions and pollutants		Reduction of emissions and pollutants, e.g. to provide continuous modernisation of the road vehicle fleet in public transport and that new vehicles meet the technical standards; the same attention as to the stimulation of the use of public transport in urban centres is also paid to other modes of sustainable mobility (cycling, pedestrian zones).
U.41	Preparedness for extreme weather conditions		In accordance with Article 41 of Regulation (EU) No. 1315/2013 in terms of climate change adaptation: It is necessary to provide the preparation of the sensitivity analysis of the transport infrastructure to climate change, and on the basis of its result implement measures and adaptations which appropriately raise the resistance of the infrastructure to climate change. The guidelines, methodologies and procedures for collecting information on extreme weather conditions and planning and implementing measures to reduce the sensitivity of traffic infrastructure to extreme weather conditions have to be developed.

7.4.2.4. Maritime transport

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measure
Maritime transport			
Elements of maritime network			
M.1	Port of Koper – Pier 1 and 2 extension		The objective of the port is to achieve transport growth of over 19 million tonnes by 2015 and over 23.5 million tonnes by 2020. In 2030, over 30 million tonnes of transhipment is expected. If these objectives are to be attained, it is necessary (inter alia) to expand Pier 1 and 2. Both measures are also defined in the adopted National Spatial Plan.
M.2.	Port of Koper – construction of Pier 3		The construction of Pier 3 as a condition to increase transhipment in the Port of Koper is projected after 2030. This measure is also defined in the National Spatial Plan.
M.3	Port of Koper – rearrangement of port infrastructure		According to the M.1, M.2 and M.4 measures, the port infrastructure also needs to be rearranged, namely: expansion of hinterland terminals, disposal facilities and warehouses, expansion or lengthening of railway track capacities, loading stations, reservoirs, parking areas, implementation of ecological restoration for dry bulk cargoes, additional road capacities, arrangement of external connections and entry to the port and external lorry terminal, etc.
M.4	Port of Koper (concession area and non-concession area) – deepening		Vessels, especially container ships, are becoming larger and have larger draught, which is why the deepening of the entry channels and pools is constantly required. Thus, the deepening of the entry canal into the Pool I and Pool I to a depth of -15m is projected in the Port of Koper by 2015, while by 2020 the entry canal into the Pool II and Pool II to a depth of 16m is foreseen.
M.5	Port of Koper – passenger terminal		Arrangement of infrastructure and construction of the passenger terminal facility

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measure
Maritime network			
M.11	Charging stations for alternative fuels		Regarding the proposal of the Directive on the employment of alternative fuels infrastructure, the core TEN-T ports (the Port of Koper being one of them) will be provided with infrastructure for charging vessels with liquefied natural gas and electric charging from land by 2025.
M.12	Motorways of the sea and development of short-distance maritime traffic		Strengthening cooperation with stakeholders to establish a single window for the organisation of highways of the sea and short-time maritime transport. Cooperation on activities to establish the free flow of freight by the sea "blue belt".
M.13	Improvement of the transport system safety		The establishment of the VTS (Vessel traffic system for monitoring maritime transport) centre with pertaining technical equipment and the organisation of a control service
Functioning/organisation of maritime transport			
M.21	Development of network into intermodal hubs, agglomerations in accordance with demand		Apart from transhipment, logistics activity is carried out in the port. This is related to the (re)arrangement of port infrastructure, described in the M3 measure, which also serves for logistics activity. For the successful development of the respective area, the proper final connections with the port (so-called *last miles*) also have to be provided, i.e. the road as well as rail and maritime connections.
M.34	Administrative capacities and training		The provision of proper organisational conditions and administrative capacities to carry out control, monitoring and information of maritime transport.
M.35	Reduction of negative impacts on the sea quality		Also, measures to permanently reduce the negative impacts on sea quality have to be adopted, such as: Training of the inspection services; purchase of proper equipment in case of spillages of dangerous substances into the sea; construction of the proper infrastructure for receipt and disposal of waste material from vessels; the provision of the circulation of water currents and thus the prevention of eutrophication through proper planning and construction of ports.

7.4.2.5. Air transport

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measure
Air transport			
Elements of air transport network			
A.1	Ljubljana Jože Pučnik Airport		The continuation of development for the needs of transporting passengers, mail and/or freight. Thus, it is important to provide appropriate air transport infrastructure, especially in terms of runway track, the construction of passenger and freight terminals, construction of additional aircraft parking positions, logistics complex, etc., on the basis of which greater financial effects and indirect effects on tourism and the economic development of the whole Slovenia will be achieved. The objective of developing Ljubljana Jože Pučnik Airport is to make it a regional airport. The airport already has a master plan for its further development. An option is also examined which foresees the Portorož Airport to be used as a multimodal link to other larger airports in the wider area.
A.2	Maribor Edvard Rusjan Airport		The continuation of development for the needs of transporting passengers, mail and/or freight. For this, it is important to provide appropriate infrastructure, especially in terms of extending the runway track, construction of freight terminal, the construction of additional parking for

Code	Measure	Harmonisation with the Transport Development Strategy	Description of measure
			aircraft, etc., on the basis of which greater financial effects and indirect effects on tourism and the economic development of the Štajerska and Pomurska region will be achieved. The airport will also be an alternative to the Ljubljana Jože Pučnik Airport. The airport already has the master plan of its further development.
A.3	Portorož Airport		The continuation of development for the needs of transporting passengers, mail and/or freight and the provision of the appropriate infrastructure for regular airport operations. In the scope of this, the following is foreseen: laying asphalt on manoeuvring surfaces to the edge of the plan-defined area, arrangement of the strip and safety area of the end of runways and other arrangements on the basis of which better financial effects and indirect effects on tourism and the economic development of the Primorska region will be achieved.
Air transport network			
A.10	Air navigation services		By implementing air navigation services, the safety, regularity and smooth operation of air transport have to be provided together with the fulfilment of international obligations of the Republic of Slovenia related to these services, as well as the provision of flights which assist in search and rescue operations, flights for humanitarian and health-related purposes and emergency flights with aircraft and flights of national aircraft. In this scope, constructions, reconstructions or the building of infrastructure facilities, devices and systems for air transport navigation services are foreseen.
A.11	Charging stations for alternative fuels		In accordance with the TEN-T Decree (1315/2013), infrastructure for the use of alternative fuels has to be provided at TEN-T airports by 2030. In regard to the draft of the Directive on the employment of alternative fuels infrastructure, infrastructure for the electric charging of aircraft will have to be provided at airports by 2025. The current Slovenian TEN-T airports are Ljubljana Jože Pučnik Airport, Maribor Edvard Rusjan Airport and Portorož Airport.
Functioning/organisation of air transport			
A.21	Development of network into intermodal hubs, agglomerations in accordance with demand		Ljubljana Jože Pučnik Airport and Maribor Edvard Rusjan Airport also have options for developing logistics activities if there is an economic interest. Both airports have spatial options and the proximity of motorway and rail connections (the latter is especially true for Maribor) in the scope of the core TEN-T connections and corridors of the core network (BA and/or MED). The Portorož Airport currently operates with only a logistics platform for the transition of passengers from air to road or maritime transport to other tourist centres on the Slovenian coast.

7.4.3. Table of measures and their impact on specific objectives

MEASURES / OBJECTIVES		1. Improvement of transport connections and harmonisation with neighbouring countries			2. Improvement of national and regional connection within Slovenia								3. Improvement of accessibility of passengers to the main cities of agglomerations and within them			4. Improvement of organisational and operational structure of the transport system to ensure efficiency and system sustainability						
		1a Elimination of congestions on borders	1b Improvement of the accessibility of international inter-urban passenger transport (including transit traffic)	1c Improvement of the accessibility of international freight transport (including transit traffic)	2a North-eastern	2b South-eastern	2c North-western	2d Goriška	2e Koroška	2f Primorska	2g Osrednjeslovenska	2h Accessibility within regions (to regional centres)	3a Ljubljana	3b Maribor	3c Koper	4a Harmonisation of legislation, rules and standards with European requirements and best practice	4b Improvement of the organisational system structure and cooperation between respective stakeholders	4c Improvement of the operational system structure	4d Improvement of the transport system safety.	4e Environmental impact reduction/mitigation	4f Improvement of energy efficiency	4g Financial sustainability of the transport system
Railway																						
Elements of the railway network																						
R.1	Koper – Ljubljana	■		■						■	■		■		■							
R.2	Zidani Most – Dobova (HR)	■	■	■	■						■											
R.3	Ljubljana–Jesenice (AT)	■	■	■		■					■		■									
R.4	Ljubljana Railway Hub (LRH)		■	■	■	■	■				■		■									
R.5	Ljubljana–Zidani Most		■	■	■						■		■									
R.6	Divača - Sežana (IT)	■		■				■		■												
R.7	Pragersko–Hodoš (HU)	■		■	■									■								
R.8	Maribor–Šentilj (AT)	■	■	■	■									■								
R.9	Pragersko–Maribor		■	■	■									■								
R.10	Zidani Most–Pragersko		■	■	■									■								
R.11	Postojna-Ilirska Bistrica-Šapjane (HR)									■	■											
Railway network																						
R.21	ETCS/GSM-R	■	■	■						■						■		■				
R.22	Electrification		■	■	■	■	■	■	■											■	■	
R.23	Renovation, upgrade of other lines							■	■	■												

MEASURES / OBJECTIVES		1. Improvement of transport connections and harmonisation with neighbouring countries			2. Improvement of national and regional connection within Slovenia								3. Improvement of accessibility of passengers to the main cities of agglomerations and within them			4. Improvement of organisational and operational structure of the transport system to ensure efficiency and system sustainability						
R.24	Safety																					
Functioning/organisation of air transport																						
R.31	Reorganisation of railway access charges																					
R.32	Multi-annual contract on the implementation of public service																					
R.33	Increase of financial sustainability																					
R.34	Improvement of the railway passenger vehicle fleet																					
R.35	Improvement of the railway freight fleet																					
R.36	Modernisation of legislation and planning guidelines																					
R.37	Development of the concept for maintaining the railway network																					
R.38	Reorganisation of operations/time schedules																					
R.39	Reduction of negative environmental impacts																					
R.40	Development of network into intermodal hubs, agglomerations in accordance with demand																					
R.41	Recycling and application of waste in construction																					
R.42	Preparedness for extreme weather conditions																					
R.43	Provision of migration corridors for wild animals and protection of drivers against collisions with wild																					

MEASURES / OBJECTIVES		1. Improvement of transport connections and harmonisation with neighbouring countries			2. Improvement of national and regional connection within Slovenia								3. Improvement of accessibility of passengers to the main cities of agglomerations and within them			4. Improvement of organisational and operational structure of the transport system to ensure efficiency and system sustainability						
	animals				■	■	■	■	■	■	■	■								■		
R.44	More accessible infrastructure for less mobile persons	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Road transport																						
Elements of the road network																						
Ro.1	Draženci–Gruškovje motorway (HR)	■	■		■																	
Ro.2	Karavanke Tunnel	■	■	■			■															
Ro.3	Development of the concept of stop facilities for motorway network			■																		
Ro.4	Connection of Bela Krajina to Novo Mesto					■																
Ro.5	Novo Mesto city network					■																
Ro.6	Connection of Bohinj and Bled to Ljubljana						■															
Ro.7	Connection of Bovec, Tolmin and Cerkno to Ljubljana						■	■				■										
Ro.8	Škofja Loka city network						■															
Ro.9	Connection of Koroška to the motorway system								■			■										
Ro.10	Connection of Hrastnik to Zidani Most										■	■										
Ro.11	Connection of Kočevje to Ljubljana										■	■										
Ro.12	Motorway network around Ljubljana		■	■							■		■									
Ro.13	Connecting Gorenjska and Štajerska				■		■				■											
Ro.14	Štajerska-Dolenjska connection				■	■					■											

MEASURES / OBJECTIVES		1. Improvement of transport connections and harmonisation with neighbouring countries			2. Improvement of national and regional connection within Slovenia								3. Improvement of accessibility of passengers to the main cities of agglomerations and within them			4. Improvement of organisational and operational structure of the transport system to ensure efficiency and system sustainability						
Ro.15	Connection of Škofja Loka/Medvode to Ljubljana						■				■											
Ro.16	Road network around Maribor				■									■								
Ro.17	Road network around Koper									■					■							
Ro.18	Connection of Ilirska Bistrica (HR) to the motorway system									■												
Ro.19	Celje city network				■						■	■										
Ro.20	Connection of Ormož to Ptuj/Maribor				■							■										
Ro.21	Nova Gorica city network							■				■										
Ro.22	Connection of Kozjansko, Rogaška Slatina and the hinterlands to the central network				■	■						■										
Road network																						
Ro.31	Improvement of the accessibility of regions without a direct connection to the TEN-T network											■										
Ro.32	Traffic management and monitoring system, traffic counts and information system	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■				■
Ro.33	Environmental protection and road safety				■	■	■	■	■	■	■	■							■	■	■	
Ro.34	Development of network into intermodal hubs, agglomerations in accordance with demand			■									■	■	■							
Ro.35	Stimulation of the use of ecological vehicles and construction of a charging stations		■										■	■	■					■	■	

MEASURES / OBJECTIVES		1. Improvement of transport connections and harmonisation with neighbouring countries			2. Improvement of national and regional connection within Slovenia								3. Improvement of accessibility of passengers to the main cities of agglomerations and within them			4. Improvement of organisational and operational structure of the transport system to ensure efficiency and system sustainability						
	network																					
Ro.36	Internalisation of external costs																					
Ro.37	Restrictive parking policy																					
Functioning/organisation of road traffic																						
Ro.41	Modernisation of legislation and planning guidelines																					
Ro.42	Improvement of financial sustainability of road network and system of tolling																					
Ro.43	Development of the concept of road network maintenance (including road reconstruction at the secondary and tertiary level)																					
Ro.44	Recycling and application of waste in construction																					
Ro.45	Reduction of emissions and pollutants																					
Ro.46	Preparedness for extreme weather conditions																					
Ro.47	Provision of migration corridors for wild animals and protection of drivers against collisions with wild animals																					
Ro.48	More accessible infrastructure for less mobile persons																					
City and suburban network																						
Elements of the city network																						
U.1	Kamnik–Ljubljana corridor																					

MEASURES / OBJECTIVES		1. Improvement of transport connections and harmonisation with neighbouring countries			2. Improvement of national and regional connection within Slovenia								3. Improvement of accessibility of passengers to the main cities of agglomerations and within them			4. Improvement of organisational and operational structure of the transport system to ensure efficiency and system sustainability						
U.2	Kranj–Ljubljana corridor						■				■		■									
U.3	Grosuplje–Ljubljana corridor					■					■		■									
U.4	Connection of Ljubljana to the airport						■				■		■									
City network																						
U.11	Ljubljana P+R (Park and Ride)										■		■									
U.12	Maribor P+R				■									■								
U.13	Slovenia P+R											■										
U.14	Development of stations											■										
U.15	Separation of traffic types – giving priority to public transport, elimination of congestions												■	■								
U.16	Increase of intermodality (P+R, etc.)											■	■									
U.17	Cycle network											■	■	■	■							
Functioning/organisation of urban traffic																						
U.31	Introduction of single ticket										■	■	■									■
U.32	Introduction of on-demand public transport services										■			■								
U.33	Adjustment of timetables (harmonised)										■					■	■					
U.34	Administrative capacities and training														■							
U.35	Vehicle fleet modernisation										■	■	■	■				■	■	■		
U.36	Information platform										■	■	■	■		■	■					
U.37	Support to non-profit groups in the field of transport															■	■					
U.38	Management and information on transport and logistics				■	■	■	■	■	■	■	■				■	■					

MEASURES / OBJECTIVES		1. Improvement of transport connections and harmonisation with neighbouring countries			2. Improvement of national and regional connection within Slovenia								3. Improvement of accessibility of passengers to the main cities of agglomerations and within them			4. Improvement of organisational and operational structure of the transport system to ensure efficiency and system sustainability						
U.39	Review/update of local/regional core plans for transport																					
U.40	Reduction of emissions and pollutants																					
U.41	Preparedness for extreme weather conditions																					
Maritime transport																						
Elements of maritime network																						
M.1	Port of Koper – Pier 1 and 2 extension																					
M.2.	Port of Koper – construction of Pier 3																					
M.3	Port of Koper - pursuant to the M1, M2 and M4 measures, and also the reorganisation of port infrastructure																					
M.4	Port of Koper – deepening of entry canals and pools																					
M.5	Port of Koper – construction of the passenger terminal facility and the arrangement of infrastructure																					
Pomorsko omrežje																						
M.11	Charging stations for alternative fuels																					
M.12	Establishment of the single window for the organisation of motorways of the sea and short-time maritime transport. Cooperation on activities to establish the free flow of freight by the sea "blue belt".																					

MEASURES / OBJECTIVES		1. Improvement of transport connections and harmonisation with neighbouring countries			2. Improvement of national and regional connection within Slovenia								3. Improvement of accessibility of passengers to the main cities of agglomerations and within them			4. Improvement of organisational and operational structure of the transport system to ensure efficiency and system sustainability						
M.13	Establishment of VTS centre to monitor maritime transport																					
Functioning/organisation of maritime transport																						
M.21	Development of logistics activity at the Port of Koper and provision of final connections ("last miles")																					
M.34	Provision of administrative capacities and training																					
M.35	Reduction of negative impacts on the sea quality																					
Air transport																						
Elements of air transport network																						
A.1	Ljubljana Jože Pučnik Airport - Continuation of development for the needs of transporting passengers, mail and/or freight.																					
A2	Maribor Edvard Pučnik Rusjan Airport- Continuation of development for the needs of transportingpassengers, mail and/or freight.																					
A.3	Portorož Airport - Continuation of development for the needs of transport of passengers, mail and/or freight and the provision of the proper infrastructure for regular airport operation.																					
Air transport network																						

MEASURES / OBJECTIVES		1. Improvement of transport connections and harmonisation with neighbouring countries			2. Improvement of national and regional connection within Slovenia								3. Improvement of accessibility of passengers to the main cities of agglomerations and within them			4. Improvement of organisational and operational structure of the transport system to ensure efficiency and system sustainability						
A10	Air navigation services																					
A.11	Charging stations for alternative fuels																					
Functioning/organisation of air transport																						
A.21	Development of network into intermodal hubs, agglomerations in accordance with demand – development of logistics activity																					

8. COMPREHENSIVE ENVIRONMENTAL IMPACT ASSESSMENT

The Strategy has been placed among the programmes that have a significant impact on the environment. For this reason, it is necessary, in accordance with Directive 2001/42/EC on the assessment of the impacts of certain plans and programmes on the environment, to assess the consequences of the impacts in the Strategy of planned measures and alternative measures on the environment in the procedure of comprehensively assessing impacts on the environment before its adoption and take a position on measures that are unacceptable due to the environmental impact. The Directive 2001/42/EC requires Member States to take a position and consult also on the cross-border impacts of the design of plans and programmes.

The Ministry of Agriculture and Environment issued Decision No. 35409-24/2012/14 on the basis of which a procedure for the comprehensive environmental impact assessment has to be implemented, along with the drafting of a Strategy on the basis of the Environmental Protection Act, and also include an assessment of the acceptability of impacts caused by the executing plans in protected areas on the basis of the Nature Conservation Act. The purpose of both these prescribed assessments is to prevent or at least significantly reduce activities that may have significant adverse impacts or consequences on the environment and protected areas, and thus achieve the principles of sustainable development, comprehensiveness and prevention. In the scope of the environmental impact assessment procedure, the impacts are determined on the basis of the Environmental Report. The procedure is conducted by the ministry responsible for the environment. Within the scope of the said procedure, the cooperation of all state bodies and organisations responsible for individual sectors, as well notification and public participation, are all provided for.

The purpose of the comprehensive assessment of impacts on the environment is to provide a high level of environmental protection and contribute to the inclusion of environmental aspects in the drafting of the Strategy. For this reason, the authors of the Environmental Report were included in the process of drafting the Strategy in the initial phase of preparing the document.

After the acquisition of a positive opinion from the competent ministry, the Environmental Report is publicly disclosed in accordance with the procedure of a comprehensive assessment of impacts on the environment (the disclosure lasts for at least 30 days), and also the public presentation is organised in this period. During the public disclosure, the remarks and opinions are collected, which are then properly integrated into the Strategy and the Environmental Report. The process of the comprehensive environmental impact assessment concludes with the acquisition of a decision on the suitability of the Environmental Report and the Strategy.

It was established during the comprehensive environmental impact assessment that the implementation of the Strategy will probably have a significant cross-border environmental impact. **In accordance with** Directive 2001/42/EC, the competent ministry in June 2014 started the procedure of cross-border consultations under the Protocol on Strategic

Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context.

In accordance with the Environment Protection Act, a position is to be taken in the comprehensive assessment of environmental impact on the wider framework of environmental policies and environmental protection goals. In the assessment of comprehensive impacts on the environment, the report entitled “Starting points for drafting of an environmental report for the programme of transport infrastructure development in the Republic of Slovenia” was prepared in the scoping phase. This report defines:

- environmental objectives of the programme in terms of its characteristics; especially in relation to the area and content;
- assessment criteria which can represent levels of deviation from the indicators of the state of environment, levels of attaining the protection objectives and other criteria which provide for a suitable assessment of impacts;
- relevant environmental areas to be assessed;
- methodology of establishing impacts.

The proposal of the report “Starting points for the drafting of an environmental report for the programme of transport infrastructure development in the Republic of Slovenia” was prepared in February 2014 and submitted for an opinion to the competent ministry, which acquired the opinions of relevant holders of spatial planning. The report was amended in June 2014 on the basis of opinions and harmonisations.

Pursuant to the Decree laying down the content of environmental reports and pursuant to the detailed procedure for assessing the effects of plan implementation on the environment (Official Gazette of the Republic of Slovenia, No. 73/05) the impacts of the implementation of the Strategy on the environment (soil and mineral resources, air, water, climate factors, nature, cultural heritage, landscape, health of people and population and material assets) were defined, described and evaluated in the Environmental Report. The Appendix for assessing the acceptability of impacts on protected areas is enclosed as a separate document.

The environmental assessment is conducted by environmental aspects and by groups of measures for all 21 sub-objectives of the Strategy, namely in terms of the attainment of an individually defined environmental objective. In general, it was established that by suitably placing spatial interventions and implementing all necessary mitigating measures, all groups of measures are acceptable from the environmental aspect.

The results of the assessment of alternatives indicate that almost all the foreseen measures are fully or partially in line with the environmental objectives, whereby at least basic mitigation measures arising from the legislation will have to be implemented for the reduction of environmental impacts in practically all interventions. Individual measures in the railway, road and air transport networks are assessed as conditionally harmonised according to the respective environmental objectives. The conditionally harmonised measures of transport policy are as follows:

Rail transport:

- R.1 Koper – Ljubljana
- R.3 Ljubljana–Jesenice

Road transport:

- Ro.9 Connection of Koroška to the motorway system
- Ro.10 Connection of Hrastnik to Zidani Most
- Ro.11 Connection of Kočevje to Ljubljana
- Ro.12 Motorway network around Ljubljana
- Ro.15 Connection of Škofja Loka/Medvode to Ljubljana
- Ro.16 Road network around Maribor
- Ro.18 Connection of Ilirska Bistrica (HR) to the motorway system

Air transport:

- A.2 Maribor Edvard Rusjan Airport
- A.3 Portorož Airport

Guidelines and mitigation measures from the aspect of environment protection

The guidelines and mitigation measures which have to be observed in the implementation of the Transport Development Strategy in the Republic of Slovenia are defined for attaining the environmental objectives of the Strategy.

The Environmental Report also defines specific mitigation measures for individual transport measures within a particular sub-objective. These have to be observed in the planning of individual transport measures.

The most important general guidelines for planning transport policy from the environmental protection aspect are:

- Measures defined in the Strategy are of a strategic nature and are not spatially placed or prepared at the project level. This is why a comprehensive assessment of environmental impacts for individual infrastructure measures will have to be prepared in next phases of drafting project documentation.
- The comprehensive assessment of the acceptability of individual measures which could have significant impacts on the nature protected areas has to be carried out at the level of a detailed plan or activity in accordance with Article 25a of the Rules on the assessment of acceptability of impacts caused by the execution of plans and activities affecting nature in protected areas.
- In the procedure of selecting measures, the development of public and rail transport should receive more attention than road and air transport and reconstructions more than constructions of new traffic routes to provide sustainable and co-natural development.
- The need for the integration of new rail and road connections should be examined in special studies (from the aspects of landscape, environment, project solutions and economic viability). Credible transport data and the cooperation of experienced experts from individual areas have to be provided for the preparation of these studies.

1. **Guidelines and mitigation measures – Soil and mineral resources**

To ensure the sustainable management of land and sustainable use of soil, the following guidelines are to be considered:

- Intervention in agricultural and forest land has to be reduced to the lowest level possible, whereby the use of land with poorer agricultural potential and land outside dense forest complexes and forest areas with important wood production functions have to be given top priority.
- Transport infrastructure should be planned so as not to increase the possibility of landslides in the wider area of interventions.

Sub-objectives	Specific mitigation measures
1a	In the spatial integration of R.1, R.3, R.6 and Ro.1, protective forests have to be avoided, especially along the River Sava (R.3) and River Mura (R.7) and north from Brestanica pri Komnu (R.6), as well as forest areas with defined wood production functions at the first level. Intervention in agricultural and forest land has to be reduced in R.1, R.3, R.6, R.8 and Ro.1 with the rational integration of individual transport infrastructure, whereby the use of land with lower productive potential and land outside dense forest stands has to be given priority.
1b	In the spatial integration of R.3, R.5, R.10, protective forests have to be avoided, especially along the River Sava (R.3, R.5) and River Savinja (R.10) and at Spodnja Polskava (R.p), as well as forest areas with defined wood production functions at the first level. The interventions in agricultural and forest land have to be reduced in R.3, R.5, R.8, R.10, Ro.1 and A.3 with the rational integration of individual transport infrastructure, whereby the use of land with lower production potential and land outside dense forest stands has to be given priority.
1c	In the spatial integration of the R.3, R5, R.10 and Ro.12, protective forests have to be avoided, especially along the River Sava (R.3, R.5) and River Savinja (R.10), at Spodnja Polskava (R.9) and east of Logatec and Zadobrova and Polje in Ljubljana (Ro.12) as well as forest areas with defined wood production functions at the first level. The interventions in agricultural and forest land have to be reduced in R.1, R.3, R.5, R.8, R.10 and Ro.12 with the rational integration of individual transport infrastructure, whereby the use of land with lower productive potential and land outside dense forest stands has to be given priority.
2.a	In the spatial integration of the R.5, Ro.13, Ro.14, Ro.20, protective forests have to be avoided, especially along the River Sava (R.5, Ro.14), River Savinja (Ro.14) and at the Borovci settlement (Ro.20) as well as forest areas with defined wood production functions at the first level. The interventions in agricultural and forest land have to be reduced in R.5, Ro.1, Ro.13, Ro.14, Ro.20 with the rational integration of individual transport infrastructure, whereby the use of land with lower productive potential and land outside dense forest stands have to be given a priority.
2.b	In the spatial integration of Ro.14, protective forests have to be avoided, especially along the River Sava the River Savinja as well as forest areas with defined wood production functions at the first level. The intervention in agricultural and forest land has to be reduced in R.3, Ro.4, Ro.14 with the rational integration of individual transport infrastructure, whereby the use of .land with lower productive potential and land outside the dense forest stands has to be given priority.
2.c	In the spatial integration of Ro.7, R.3, Ro.6, Ro.13, protective forests have to be avoided, especially along the River Sava and the River Savinja as well as forest areas with defined wood production functions at the first level. The intervention in agricultural and forest land has to be reduced in R.3, Ro.6, Ro.7, Ro.13, U.4 (railway) with the rational integration of individual transport infrastructure, whereby the use of the land with lower productive potentials and land outside dense forest stands have to be given priority.
2.d	In the spatial integration of R.6, the protective forests have to be avoided, especially at Brestanica pri Komnu and forest areas with defined wood production functions at the first level. The intervention in agricultural and forest land has to be reduced in the R.6 measure with the rational integration of individual transport infrastructure, whereby the use of land with lower productive potential and land outside dense forest stands has to be given priority.
2.e	In the spatial integration of Ro.9, the protective forests have to be especially avoided along the River Paka and the River Velunja as well as the forest areas with defined wood production functions at the first level. The intervention in agricultural and forest land has to be reduced in the Ro.9 measure with the rational integration of individual transport infrastructure, whereby the use of land with lower productive potential and land outside dense forest stands has to be given priority.
2.f	In the spatial integration of Ro.18, the forest areas with defined wood production functions at the first level have to be avoided. The intervention in agricultural and forest land has to be reduced in the Ro.18 measure with the rational integration of individual transport infrastructure, whereby the use of land with lower productive potential and land outside dense forest stands has to be given priority.
2.g	In the spatial integration of R.3, R.5, Ro.10, Ro.13, Ro.14, protective forests have to be avoided, especially along the River Sava and the River Savinja and south of Radomlje, as well as forest areas with defined wood production functions at the first level. The intervention in agricultural and forest land has to be reduced in R.1, R.3, R.5, Ro.10, R.11, Ro.13, R.14, Ro.15, U.4 (railway) with the rational integration of individual transport infrastructure, whereby the use of land with lower productive potential and land outside dense forest stands has to be given priority.
2.h	In the spatial integration of Ro.7, Ro.10, Ro.13, Ro.20, the protective forests have to be avoided, especially along the River Sava and the River Savinja and south of Radomlje, protective forests of Idrijsko-Cerkljansko hills and at Boranci, as well as forest areas with defined wood production functions at the first level. The interventions in agricultural and forest land have to be reduced in Ro.7, Ro.9, Ro.10, Ro.11, Ro.20 with the rational integration of individual transport infrastructure, whereby the use and with poorer productive potential and land outside dense forest stands has to be given priority.
3.a	In the spatial integration of R.3 and R.5, protective forests have to be avoided, especially along the River Sava and forest areas with defined wood production functions at the first level. The intervention in agricultural and forest land has to be reduced in R.1, R.3, R.5, U.4 (railway) with the rational integration of individual transport infrastructure, whereby the use of land with lower productive potential and land outside dense forest stands has to be given priority.
3.b	In the spatial integration of R.10, the protective forests have to be avoided, especially along the River Sava and the River Savinja (R.10) and the forest areas with defined wood production functions at the first level. The intervention in agricultural and forest land has to be reduced in R.8, R.10 with the rational integration of individual transport infrastructure, whereby the use of land with lower productive potential and land outside dense forest stands has to be given a priority.
3.c	In the spatial integration of R.1, forest areas with defined wood production functions at the first level have to be avoided. Interventions in agricultural and forest land have to be reduced in R.1 with the rational integration of individual transport infrastructure, whereby the use of the land with poorer productive potential and land outside

Sub-objectives	Specific mitigation measures
	dense forest stands have to be given priority.
4.a -g	-

2. Guidelines and Mitigation Measures - Air

The Strategy measures are mainly of a local nature, which is why it is recommended that some are also included in the more detailed programmes of measures to reduce PM_{10} particle pollution which are prepared on the basis of already adopted Decrees on the plans for air quality in the area of extensive pollution of the ambient air.

The reduction of private passenger transport should be one of the priorities of all large cities with a great number of daily commuters. Apart from the measures to reduce private passenger transport in cities based on the internalisation of environmental costs and related to time limitations on parking and high parking fees, also strategies should also be implemented to improve public transport; i.e. city as well as local transport. People would use public transport more often if it was available at more favourable prices and did not additionally impede the everyday tempo. The stated measures will contribute to the reduction of pollutant emissions into the air and thus also prevent the attainment of upper limits of pollutant emissions into the atmosphere.

3. Guidelines and Mitigation Measures – Climate factors

The preparation of measures to attain the transport objectives referred to in the Strategy with the purpose of mitigating climate change must take into account the so-called indicative objectives to reduce greenhouse gas emissions which are listed for individual sectors in the proposed Operational Programme for Reducing Greenhouse Gas Emissions by 2020 with a vision by 2030. The indicative sector objectives for reducing greenhouse gas emissions by transport are as follows:

- the rapid growth of greenhouse gas emissions must be halted and reduced by 9 per cent by 2020 in comparison with 2008 through the introduction of sustainable mobility measures;
- the trend of growing greenhouse gas emissions produced by traffic must be reversed to prevent them growing by more than 18 per cent by 2030 in comparison with 2005; i.e. a 15 per cent reduction by 2030 in comparison with 2008;
- a vision of further emission reduction by 90 per cent by 2050 must be integrated into measures for the attainment of the objectives of the Strategy.

To attain the environmental target value defined for the transport sector in the Operational Programme for Reducing Greenhouse Gas Emissions by 202 with a vision by 2030, measures to attain the sub-objectives of the Strategy are especially important. These are included in objective No. 4 “Improvement of organisational and operational structure of transport system to ensure efficiency and system sustainability", among which special attention in terms of mitigation climate change should be given to:

- Establishment of charging stations for alternative fuels
- Internalisation of external costs, and
- Implementation of restrictive parking policies in urban areas

The Strategy measures should be designed in a resource-efficient way, meaning that the sensitivity of transport infrastructure to climate change and natural disasters and anthropogenic disasters is properly observed. For all measures of new arrangements of transport infrastructure in terms of adaptation to climate change, it is necessary to:

- Provide the preparation of an analysis of the sensitivity of the transport infrastructure to climate change, and
- Implement measures and adjustments on the basis of the analysis results which properly improve infrastructure resistance to climate change.

To attain the environmental objective in regard to adaptation to climate change, the following also has to be taken into account:

- Transport infrastructure in Slovenia has to be less sensitive in the long term to the consequences of extreme precipitation causing floods or road surfaces covered quickly by snow; the railway network should also not be affected by the glaze ice phenomenon. In planning every new construction or expansion of the existing transport network, an analysis of the sensitivity of transport infrastructure to the above-mentioned extreme weather conditions has to be conducted and on the basis of its results a plan made of measures for the lasting reduction of the consequences of these phenomena.

4. Guidelines and Mitigation Measures - Water

To restrict the heavy effects of transport infrastructure on fresh-water sources and thus prevent negative impacts on fresh water quality, the integration of transport infrastructure in water protected areas has to be avoided.

In the spatial placement of traffic infrastructure, it is necessary to avoid placing facilities in areas with a flood risk and its related erosion. In the case of interventions in these areas, it has to be proved that the existing level of flood risk of the wider area will not increase.

In planning interventions in the area with extremely high, very high and highly vulnerable water bearing beds, it is necessary to study and plan the appropriate technical solutions to prevent the negative impacts of construction and operation, as well as in the case of exceptional events (e.g.: spillages of dangerous substances).

Transport infrastructure should not be sited in the coastal land. According to Article 37 of the Water Act, an exception is possible only on the basis of expert argumentation stating that the facility cannot be sited elsewhere without it causing disproportionately high costs. Also, the costs of the reduction of ecosystem services in the case of interventions in the coastal area have to be included in the cost calculation.

Sub-objectives	Specific mitigation measures
1a	In Ro.1, Ro.2, R.3 and R.1, the following has to be considered: there is a great probability that the implementation of the measure will significantly affect the highly vulnerable water bearing bed, and for this reason the assessment of the hazard to the groundwater has to be prepared during the drafting of project documentation. The assessment has to also include the appropriate way of bridging such an area in accordance with groundwater protection. In R.1, the following has to be observed: appropriate technical solutions have to be planned that will prevent negative impacts on the bathing waters in bathing areas in the wide area of Koper during construction and operation, as well as in the case of extraordinary events (e.g.: spillages of dangerous substances).
1b	In Ro.1, Ro.2, Ro.13, R.3 and A.2, the following has to be observed: there is a great probability that the implementation of the measure will significantly affect the highly vulnerable water bearing bed and for this reason an assessment of the hazard to groundwater has to be prepared during the drafting of project documentation. The assessment has to also include the appropriate way of bridging such an area in accordance with groundwater protection. In A.3, the following has to be considered: appropriate technical solutions have to be planned that will prevent the negative impacts on the bathing waters of bathing areas in the wide area of Strunjan during construction and operation, as well as in case of extraordinary events (e.g.: spillages of dangerous substances).
1c	In R.3, and Ro.12, Ro.2, R.1, the following has to be observed: there is a great probability that the implementation of the measure will significantly affect the highly vulnerable water bearing bed and for this reason an assessment of the hazard to groundwater has to be prepared during the drafting of project documentation. The assessment has to also include the appropriate way of bridging the area in accordance with groundwater protection. In R.1, M.1 – M.4, the following has to be observed: appropriate technical solutions have to be planned that will prevent the negative impacts on the bathing waters of bathing areas in the wide area of Koper during

Sub-objectives	Specific mitigation measures
	construction and operation as well as in the case of extraordinary events (e.g.: spillages of dangerous substances).
2.a	In Ro.1, Ro.13, Ro.16 and Ro.20, the following has to be observed: there is a great probability that the implementation of the measure will significantly affect the highly vulnerable water bearing bed and for this reason an assessment of the hazard to the groundwater has to be prepared during the drafting of project documentation. The assessment has to also include the appropriate way of bridging such an area in accordance with groundwater protection.
2.b	In R.3, the following has to be observed: there is a great probability that the implementation of the measure will significantly affect the highly vulnerable water bearing bed and for this reason an assessment of the hazard to the groundwater has to be prepared during the drafting of project documentation. The assessment has to also include the appropriate way of bridging such an area in accordance with groundwater protection.
2.c	In R.3, Ro.6, Ro.13 and Ro.15, U.4, Ro.2, the following has to be observed: there is a great probability that the implementation of the measure will significantly affect the highly vulnerable water bearing bed and for this reason the assessment of the hazard to the groundwater has to be prepared during the drafting of project documentation. The assessment has to also include an appropriate way of bridging the area in accordance with the groundwater protection. In Ro.6 and Ro.7, the following has to be observed: the appropriate technical solutions have to be planned to prevent the negative impacts on the bathing waters of bathing areas during construction and operation as well as in the case of extraordinary events (e.g.: spillages of dangerous substances).
2.d	In R.6, the following has to be observed: there is a great probability that the implementation of the measure will significantly affect the highly vulnerable water bearing bed and for this reason an assessment of the hazard to the groundwater has to be prepared during the drafting of project documentation. The assessment has to also include an appropriate way of bridging the area in accordance with groundwater protection.
2.e	In Ro.9, the following has to be observed: there is a great probability that the measure will significantly affect the highly vulnerable water bearing bed and for this reason the assessment of the hazard to the groundwater has to be prepared during the drafting of project documentation. The assessment has to also include n appropriate way of bridging the area in accordance with the groundwater protection.
2.f	In R.1, the following has to be observed: there is a great probability that the implementation of the measure will significantly affect the highly vulnerable water bearing bed and for this reason an assessment of the hazard to the groundwater has to be prepared during the drafting of project documentation. The assessment has to also include the appropriate way of bridging the area in accordance with groundwater protection. In R.1 and Ro.17, the following has to be observed: the appropriate technical solutions have to be planned to prevent the negative impacts on the bathing waters of bathing areas in the wide area of Koper during construction and operation as well as in the case of extraordinary events (e.g.: spillages of dangerous substances). In Ro.18, the following has to be observed: if the route passes through the influential area of the Škocjanske jame Regional park, the appropriate technical measures have to be provided to enable efficient prevention of district groundwater pollution in the Škocjanske jame area.
2.g	In R.1, R.3, Ro.10, Ro.12, Ro.13, Ro.15 and U.4, the following has to be observed: there is a great probability that the implementation of the measure will significantly affect the highly vulnerable water bearing bed and for this reason an assessment of the hazard to the groundwater has to be prepared during the drafting of project documentation. The assessment has to also include an appropriate way of bridging the area in accordance with groundwater protection. In R.1, the following has to be observed: the appropriate technical solutions have to be planned to prevent the negative impacts on the bathing waters of bathing areas in the wide area of Koper during construction and operation as well as in the case of extraordinary events (e.g.: spillages of dangerous substances).
2.h	In Ro.7, Ro.9, Ro.10, Ro.20 and Ro.21, the following has to be observed: there is a great probability that the implementation of the measure will significantly affect the highly vulnerable water bearing bed and for this reason an assessment of the hazard to the groundwater has to be prepared during the drafting of project documentation. The assessment has to also include an appropriate way of bridging the area in accordance with groundwater protection.
3.a	In R.1, R.5, Ro.12 and U.4 (railway), the following has to be observed: there is a great probability that the implementation of the measure will significantly affect the highly vulnerable water bearing bed and for this reason the assessment of the hazard to the groundwater has to be prepared during the drafting of project documentation. The assessment has to also include an appropriate way of bridging the area in accordance with groundwater protection. In R.1, the following has to be observed: the appropriate technical solutions have to be planned to prevent the negative impacts on the bathing waters of bathing areas in the wide area of Koper during construction and operation as well as in the case of extraordinary events (e.g.: spillages of dangerous substances).
3.b	In Ro.16, the following has to be observed: there is a great probability that the implementation of the measure will significantly affect the highly vulnerable water bearing bed and for this reason the assessment of the hazard to the groundwater has to be prepared during the drafting of project documentation. The assessment has to also include an appropriate way of bridging the area in accordance with the groundwater protection.
3.c	In R.1, the following has to be observed: there is a great probability that the implementation of the measure will significantly affect the highly vulnerable water bearing bed and for this reason an assessment of the hazard to the groundwater has to be prepared during the drafting of project documentation. The assessment has to also include an appropriate way of bridging the area in accordance with the groundwater protection. In R.1 and Ro.17, the following has to be observed: the appropriate technical solutions have to be planned to prevent the negative impacts on the bathing waters of bathing areas during construction and operation, as well as in the case of extraordinary events (e.g.: spillages of dangerous substances).
4.a -g	-

5. **Guidelines and Mitigation Measures - Nature** For the sustainable preservation of the natural environment and biodiversity, variants which do not intervene into the naturally preserved area and have less impact on the migration paths of wild animals should be given priority.

To providing for the protection of areas with nature protection status, it is necessary to observe the following guidelines:

- In the spatial placing of transport infrastructure it is necessary to avoid the placement of facilities in areas of natural features. By pursuing the guideline, the types and characteristics of natural features will be preserved. In the spatial placing of transport infrastructure, it is necessary to avoid the placement of facilities in protected areas. If interventions cannot be avoided and if this is allowed under the Act on the protection of individual area, it is necessary to observe the guidelines, starting-points and conditions for the protection of protected areas which are given in protection regimes adopted with Acts on protection.
- In the siting of transport infrastructure it is necessary to avoid placing facilities in Natura 2000 areas.

The period for conducting interventions has to be adjusted to the life cycles of animals and plants. By observing the measure, disturbances to the life cycles of animals and plants will be milder and thus the probability of attaining or preserving a favourable state of the populations will be higher.

If the electrification of a railway line is planned in the area of flight and migratory routes of birds, it is necessary to foresee appropriate technical solutions to prevent bird collisions with power lines.

According to the objective of the Resolution on the National Environmental Action Plan 2005-2012, it is expected that protected areas in the territory of the Republic of Slovenia will expand. Therefore, the spatial placing of transport infrastructure proposed for protection should be avoided in order to prevent possible conflicts and negative impacts on attaining of the environmental objectives of nature preservation.

Sub-objectives	Specific mitigation measures
1a	In R1, the following has to be observed: Appropriate passages for wild animals have to be provided in the area between Vrhnika and Logatec, which will be planned according to good practice in the European Union. R.3 should be designed to keep the impact on the integrity and functionality of protected areas low or eliminate it completely (special attention has to be paid to the Šmarna Gora area). In R.8, the following has to be observed: Appropriate technical solutions (e.g. the implementation of bridging in box-shape construction) have to be foreseen to prevent the collision of birds with electric lines spanning the Drava River.
1b	In R.5 and R.10, Ro.12, the following has to be observed: appropriate passages for wild animals through transport infrastructure have to be provided which will are in line with good practice in the European Union. In Ro.12, the following has to be observed: The priority is to invest in measures of public passenger transport. If the completion of the motorway network is necessary, already existing traffic routes should be extended, if possible, while interventions in the pristine environment have to be avoided to the greatest possible extent. R.3 and Ro.12 should be designed to keep the impact on the integrity and functionality of protected areas low or eliminate it completely (special attention has to be paid to the Šmarna Gora area and the Ljubljana Marshes). In R.8, the following has to be observed: Appropriate technical solutions (e.g. the implementation of bridging in box-shape construction) have to be foreseen to prevent the collision of birds with electric lines spanning the Drava River. In A.3, the following has to be observed: - the expansion of the airport is permissible only if the number of airport operations is decreasing and the number of passengers is increasing; - interventions in the protected area of the Sečovlje salt-pans have to be avoided to the greatest extent possible;

Sub-objectives	Specific mitigation measures
	- negative impacts on the characteristics of the Sečovlje salt-pan areas, on the basis of which the Ramsar locality, Natura 2000 and landscape park are defined, has to be prevented; - the airport must not be expanded to habitats which are important for the preservation of biodiversity in the area of the Sečovlje salt-pans.
1c	In R.1, R.5 and R.10, the following has to be observed: appropriate passages for wild animals through the railway line have to be provided according to good practice in the European Union. In R.8, the following has to be observed: Appropriate technical solutions (e.g. the implementation of bridging in box-shape construction) have to be foreseen to prevent the collision of birds with electric lines spanning the Drava River. In Ro.12, the following has to be observed: The priority is to invest in measures of public passenger transport. If the completion of the motorway network is necessary, already existing traffic routes should be extended, if possible, while interventions in the pristine environment have to be avoided to the greatest possible extent. R.3 and Ro.12 should be designed to keep the impact on the integrity and functionality of protected areas low or eliminate it completely (attention has to be paid to the Šmarna Gora area and the Ljubljana Marshes).
2.a	In R.5 and Ro.14, the following has to be observed: appropriate passages for wild animals through the railway and road infrastructure have to be provided according to good practice in the European Union.
2.b	In Ro.4, the following has to be observed: appropriate passages for wild animals through the transport infrastructure have to be provided which are in line with good practice in the European Union. R.3 should be designed to keep the impact on the integrity and functionality of protected areas low or eliminate it completely (special attention has to be paid to the Šmarna Gora area).
2.c	In Ro.7, the following has to be observed: The appropriate passages of wild animals through the road infrastructure will have to be provided which are in line with positive practice in the area of the European Union. In Ro.15, the following has to be observed: The priority is to invest in measures of public passenger transport. If the new construction is necessary, existing traffic routes should be extended, if possible. Interventions in the pristine environment should be avoided to the greatest extent possible. R.3 should be designed to keep the impact on the integrity and functionality of protected areas low or eliminate it completely (special attention has to be paid to the Šmarna Gora area).
2.d	-
2.e	In Ro.9, the following has to be observed: appropriate passages for wild animals through the transport infrastructure have to be provided which are in line with good practice in the European Union.
2.f	In R.1 and Ro.18, the following has to be observed: appropriate passages for wild animals through the railway and road infrastructure have to be provided according to good practice in the European Union. In Ro.18, the following has to be observed: The road should be planned outside the Škocjanske jame Regional Park area (area is under the UNESCO protection and defined as the Ramsar Wetland. If the route passes through the influential area of the Škocjanske jame Regional Park, appropriate technical measures have to be provided which enable the efficient prevention of district groundwater pollution in the Škocjanske jame area.
2.g	In R.1, R5, Ro.10, Ro.11, Ro.12 and Ro.14, the following has to be observed: appropriate passages for wild animals through the transport infrastructure have to be provided which are in line with positive practice in the European Union. In Ro.15, the following also has to be observed: The priority is to invest in the measures of public passenger transport. If the new construction is necessary, existing traffic routes should be extended, if possible. Interventions in the pristine environment should be avoided to the greatest extent possible. R.3 should be designed to keep the impact on the integrity and functionality of protected areas low or eliminate it completely (special attention has to be paid to the Šmarna Gora area).
2.h	In Ro.7, Ro.9 and Ro.11, the following has to be observed: The priority is to invest in measures of public passenger transport. If the new construction is necessary, the existing traffic routes should be extended, if possible. Interventions in the pristine environment should be avoided to the greatest extent possible. In Ro.7, Ro.9, Ro.10 and Ro.11, the following has to be observed: appropriate passages for wild animals through the transport infrastructure have to be provided which are in line with good practice in the European Union.
3.a	In R.1, R5 and Ro.12, appropriate passages of wild animals through the transport infrastructure have to be provided in line with good practice in the European Union. R.3 and Ro.12 should be designed to keep the impact on the integrity and functionality of protected areas low or eliminate it completely (special attention has to be paid to the Šmarna Gora area and the Ljubljana Marshes).
3.b	In R10, the following has to be observed: appropriate passages for wild animals through the railway line have to be provided according to the good practice in the European Union. In R.8, the following has to be observed: appropriate technical solutions (e.g. the implementation of bridging in box-shape construction) have to be foreseen to prevent the collision of birds with electric lines spanning the Drava River.
3.c	In R1, the following has to be observed: Appropriate passages for wild animals have to be provided in the area between Vrhnika and Logatec which are in line with good practice in the European Union.
4.a -g	-

6. Guidelines and Mitigation Measures – Human health

a. Air quality

Transport policy plans concerning excessive pollution of ambient air in regard to the management of transport in the existing transport network and in regard to its maintenance have to consider the following ordinances:

- Ordinance on the air quality plan in Kranj Municipality (Official Gazette of the Republic of Slovenia, No. 108/13),
- Ordinance on the air quality plan in Celje Municipality (Official Gazette of the RS, No. 108/13),
- Ordinance on the air quality plan in Novo Mesto Municipality (Official Gazette of the Republic of Slovenia, No. 108/13),
- Ordinance on the air quality plan in Maribor Municipality (Official Gazette of the RS, No. 108/13),
- Ordinance on the air quality plan in the area of Zasavje (Official Gazette of the Republic of Slovenia, No. 108/13),
- Ordinance on the air quality plan in Murska Sobota Municipality (Official Gazette of the Republic of Slovenia, No. 88/13),
- Ordinance on the air quality plan in the area of Zasavje (Official Gazette of the Republic of Slovenia, No. 24/14).

The Detailed Programme of Measures for the Reduction of PM(10) particles pollution will be prepared according to the ordinances. The Programme will have to be observed when planning the transport policy for the wider problematic area. The priority in the selection procedure should be given to variants which provide the greatest improvement to ambient air quality.

When preparing spatial acts for new infrastructural interventions or for the extension of the existing transport network, the following general guidelines have to be observed in order to attain the objective of reducing ambient air pollution in the area of impact of the respective intervention:

- Measures to reduce pollutant emissions (prevention of traffic congestion, provision of smooth traffic flow at moderate travel speeds between 60 and 90km/h, traffic rerouting) have to be provided to the greatest extent possible;
- Implementation of measures to prevent an increase in traffic flows on individual sections of the road network and the introduction of measures to prohibit the access of motor vehicles (especially freight vehicles) which do not meet environmental standards for new vehicles int the areas with excessive pollution;
- The introduction of measures in populated areas which are especially sensitive to ambient air pollution (residential buildings, areas for health services, tourist areas) has to be avoided.

Sub-objectives	Specific mitigation measures
1a	-
1b	In relation to the Ro.12 measure (Motorway network around Ljubljana), the implementation of the following mitigation measures have to be provided in the area of the Ljubljana agglomeration to decrease the number of excessive daily levels of particles in ambient air: - control of road vehicle speed limits during the highest levels of ambient air pollution with particles in the area of the Ljubljana agglomeration; - regular maintenance of motorway surfaces with cleaning or other substances to reduce re-suspension to the largest extent possible; and - to provide the improvement of ambient air quality in the wider motorway network area around Ljubljana, other measures of the Detailed Programme of Measures for Reduction of PM(10) particle air pollution are to be considered which will be prepared for the traffic sector and other sources of pollution on the basis of the Ordinance on the air quality plan in the area of Ljubljana Municipality (Official Gazette of the Republic of Slovenia, No. 24/14).
1c – 2f	-

Sub-objectives	Specific mitigation measures
2.g	In relation to the Ro.12 measure (Motorway network around Ljubljana), the implementation of the following mitigation measures have to be provided in the area of the Ljubljana agglomeration to decrease the number of excessive daily levels of particles in ambient air: - control of road vehicle speed limits during the highest levels of ambient air pollution with particles in the area of the Ljubljana agglomeration; - regular maintenance of motorway surfaces with cleaning or other substances to reduce re-suspension to the greatest extent possible; and - to provide the improvement of ambient air quality in the wider motorway network area around Ljubljana, other measures of the Detailed Programme of Measures for Reduction of PM(10) particle air pollution are to be considered which will be prepared for the traffic sector and other sources of pollution on the basis of the Ordinance on the air quality plan in the area of Ljubljana Municipality (Official Gazette of the Republic of Slovenia, No. 24/14).
2.h	-
3.a	In relation to the Ro.12 measure (Motorway network around Ljubljana), the implementation of the following mitigation measures have to be provided at the area of Ljubljana agglomeration to decrease the number of excessive daily levels of particles in the ambient air: - control of road vehicle speed limits during the highest levels of ambient air pollution with particles in the area of the Ljubljana agglomeration; - regular maintenance of motorway surfaces with cleaning or other substances to reduce re-suspension to the greatest extent possible; and - to provide the improvement of ambient air quality in the wider motorway network area around Ljubljana, other measures of the Detailed Programme of Measures for Reduction of PM(10) particle air pollution are to be considered which will be prepared for the traffic sector and other sources of pollution on the basis of the Ordinance on the air quality plan in the area of Ljubljana Municipality (Official Gazette of the Republic of Slovenia, No. 24/14).
3.b	In accordance with the Ordinance on the air quality plan in the area Maribor Municipality (Official Gazette of the Republic of Slovenia, No. 108/13) the Detailed Programme of Measures for the Reduction of PM(10) particles pollution will be prepared for the Maribor Municipality. This Programme will have to be observed when planning transport policy in order to attain sub-objective 3b. Priority should be given to measures which provide for the improvement of ambient air quality to the greatest extent.
3.c	-
4.a -g	-

b. Noise pollution

When planning policy on transport infrastructure development, it is necessary in order to reduce noise pollution of the environment in accordance with Directive 2002/49/EC, respective Slovenian legislation, Operational noise protection programme and in accordance with Ordinance (EU) No. 1315/2013 on Union guidelines for the development of the Pan-European transport network to provide measures contributing to:

- Reduction of external transport costs and environment protection
- Reduction of the exposure of urban areas to negative impacts of transit road and rail transport.

Noise pollution in Slovenia is highest along the road and railway network, and especially increases in urban centres and near more important transport hubs. Excessive noise polluters are obliged to provide measures for the reduction of environmental burdening according to the Environmental Protection Act. The implementation of measures is necessary in areas where the environment is already excessively noise-polluted, while the mitigation measures have to be carried out on all new transport corridors projected in the Strategy.

The implementation of mitigation measures on the transport network which is the subject of the policy of transport infrastructure development has to be harmonised with the Operational Programme for Noise Protection. The Operational Programme was adopted in December 2012 and consists of a strategic part with defined general conditions for the implementation of anti-noise measures in the existing and new infrastructural sources and an implementation a, which defines measures projected for the 2012-2017 period to improve the most exposed areas.

When preparing spatial acts for infrastructural interventions, the following guidelines for attaining the objective of reducing the environmental noise pollution have to be observed:

- The measures for the reduction of emissions at the noise source (measures in the network, vehicle fleet, logistics measures, temporary or permanent rerouting of transit transport, decreasing speeds in noise-exposed areas) have to be provided to the greatest extent possible.
- In areas with exceeded limits of environmental burden, measures have to be implemented for the prevention and spreading of noise in the environment (noise barriers, bunds, covered galleries, etc.) and to provide living conditions in buildings (passive protection).
- The implementation of measures in quiet populated areas and/or in areas which under noise protection legislation are defined as highly noise sensitive (residential buildings, areas for health services, tourist areas) has to be avoided.
- The implementation of measures in quiet open areas (protected areas according to regulations on nature preservation) has to be avoided.

According to the Operational Programme and noise protection legislation, the measures of environmental noise protection in the transport network have mainly to be measures to reduce noise emissions at source, measures to prevent noise expansion into the environment and, if necessary, measures to provide appropriate living conditions in overburdened buildings.

Measures to reduce noise emissions at source are the most efficient. The reduction of emissions of transport noise sources can be achieved mainly through the modernisation of the vehicle fleet (road, railway, air and maritime transport), and through the redirection of transport flows, with an emphasis on rerouting long-distance traffic to the railways, and through greater efficiency of public passenger transport by improving the technical characteristics of road and railway surfaces and logistical measures of transport management (temporary rerouting, lowering travel speeds, etc.). According to the EU level guidelines, the emissions of individual noise sources are regulated in accordance with the demands and guidelines of the following programme documents:

- Limitation of emissions produced by railway rolling stock and infrastructure network according to the Directive 2008/57/EC and TSI guideline C(2011) 658
- Reduction of noise emission produced by motor vehicles and infrastructure to the lowest possible level (COM (2011) 321
- Limitation of noise emissions of air transport in accordance with Directive 2002/30/EC

In Slovenia, the reduction of noise emissions of railway transport is provided with R.22 (electrification), R.34 (improvement of railway passenger rolling stock) and R.35 (improvement of railway freight rolling stock) measures. The measures are harmonised with the Commission Decision 2011/229/EU on the technical specifications of interoperability related to the sub-system ‘rolling stock – noise’ of the Pan-European conventional rail system (TSI-noise). The guideline is used for new and existing rolling stock, while the TSI specification regulates emissions of rolling stock (traction and hauled vehicles) and also the characteristics of railway infrastructure (track roughness). The implementation of the guideline will significantly improve the state of the environment around the railway network.

The Strategy will provide the reduction of road vehicle noise emissions with general measures which enable a more efficient shift of long-distance traffic to the railways and the disburdening of road network in the area of large urban centres. The measures for reducing road transport noise emissions are partly captured in the programme of environmental policy under tRo.33 (environmental protection and traffic safety), Ro.36 (internalisation of external costs) and Ro.37 (restrictive parking policy) and mainly include:

- Use of porous wearing course of the road
- Use of vehicles with alternative drive (private and public traffic)

- Shift of transit transport and reduction of travel speeds in noise-sensitive areas.

The measures to prevent the expansion of noise into the environment (noise barriers and bunds) are used mainly to protect the environment against noise from road and railway infrastructure. The measures are suitable mainly for the protection of densely populated areas along railway lines and along the road network, while the implementation of these measures along existing roads passing through settlements with already formed and distinguished urban structure is reasonable only exceptionally. The measures for providing appropriate living conditions (improvement of noise insulation of windows in overburdened buildings with protected spaces) are suitable in areas where other measures are not technically implementable or economically viable. Both measures of noise protection (noise barriers/bunds and passive protection) are included in the Strategy under the general measures of transport policy No. R.39 (reduction of impacts on the environment caused by railway infrastructure) and Ro.33 (environmental protection on road infrastructure).

Increased impacts of environmental burdens are expected during the execution of infrastructural interventions. The impacts during construction will be of a short-term nature and reversible. The following mitigation measures in particular have to be provided to reduce impacts during the execution of interventions:

- Use of equipment and construction machinery manufactured in accordance with emissions norms for noise from construction machinery in accordance with the Rules on noise emissions for machinery used in the open and according to the Directives 97/68/EC, 2004/26/EC, 2006/105/EC, 2010/26/EC, 2011/88/EC and 2012/46/EC
- Observing the time limitations of constructions near the populated areas
- The construction plateaus and transport routes have to be selected in such a way that the noise pollution due to the transport of material, operation of devices at the facilities and construction of facilities will not exceed the limit values at the closest buildings
- Implementation of temporary anti-noise measures for protecting of populated areas near construction plateaus and transport routes in case of the exceeding levels of limit values.

Sub-objectives	Specific mitigation measures
1a	-
1b	Ro.12 - Motorway network around Ljubljana: In Ro.12, the reconstruction of a larger number of areas will also be necessary, while the measure from the noise protection aspect is important since the environmental noise pollution in the existing state, apart from the national motorway network, is the highest in the area of the Ljubljana northern bypass and also along the remaining part of the Ljubljana motorway ring. In addition to the legislative measures, it is estimated that the shift of transit freight transport from the Ljubljana north bypass will be necessary, while in the Ljubljana ring area the speed limit will have to be adjusted accordingly. A.2 and A.3 (Maribor and Portorož Airport): The reduction of air transport noise, with the exception of providing international applicable standards for aircraft emissions and logistics measures for traffic management, is not executable. The reduction of emissions and environment burdens caused by aircraft transport is regulated by the Directive 2002/30/EC on the formation of rules and procedures related to the implementation of noise-related restrictions of operation at airports in the European Community. The increased environmental burden is expected mainly in the area of Portorož Airport, where an additional mitigation measure of purchase and change of the intended use of buildings for which the excess of legally prescribed noise pollution was established. AThe variant mitigation measure for the reduction of the impact of Portorož Airport on the increased level of environmental noise pollution is the provision of multimodal transport connections to other airports in the wider vicinity (Ljubljana, Trieste, Reka, Pula) where the capacity of passenger and freight transport is provided already in the existing state.
1c	Ro.12 – Motorway network around Ljubljana: In Ro.12, the reconstruction of a larger number of areas will also be necessary, while the measure from the noise protection aspect is important since the environmental noise pollution in the existing state, apart from the national motorway network, is highest in the area of the Ljubljana northern bypass and also along the remaining part of the Ljubljana motorway ring. In addition to the legislative measures, it is estimated that the shift of transit freight transport from the Ljubljana north bypass will be necessary, while in the Ljubljana ring area the speed limit will have to be adjusted accordingly.
2.a – 2.f	-
2.g	Ro.12 – Motorway network around Ljubljana: In Ro.12, the reconstruction of a larger number of areas will also be necessary, while the measure from the noise protection aspect is important since the environmental noise pollution in the existing state, apart from the national motorway network, is highest in the area of the Ljubljana northern bypass and also along the remaining part of the Ljubljana motorway ring. In addition to the legislative measures, it is estimated that the shift of transit freight transport from the Ljubljana north bypass will be

Sub-objectives	Specific mitigation measures
	necessary, while in the Ljubljana ring area the speed limit will have to be adjusted accordingly.
2.h	-
3.a	Ro.12: Motorway network around Ljubljana: In Ro.12, the reconstruction of a larger number of areas will also be necessary, while the measure from the noise protection aspect is important since the environmental noise pollution in the existing state, apart from the national motorway network, is highest in the area of the Ljubljana northern bypass and also along the remaining part of the Ljubljana motorway ring. In addition to the legislative measures, it is estimated that the shift of transit freight transport from the Ljubljana north bypass will be necessary, while in the Ljubljana ring area the speed limit will have to be adjusted accordingly.
3.b – 4.g	-

7. Guidelines and Mitigation measures – Population and material assets

In accordance with the Resolution on Transport Policy of the Republic of Slovenia (Official Gazette of the Republic of Slovenia, no. 58/06), the Transport Development Strategy in the Republic of Slovenia has to follow the principles of sustainable and balanced regional development, and strive to reduce external transport costs. Priority should be given to measures which provide more sustainable mobility in the long term.

When planning transport policy, priority should be given to improving transport connections to less-developed regions (e.g.: Sub-objective 2b (Ro.4 measure) and sub-objective 2c (Ro.7) since accessibility by suburban transport to these areas cannot be improved.

Sub-objectives	Specific mitigation measures
1a	-
1b	A.3 – Portorož Airport: The measure should be planned only for interventions that are certain not to have an impact on the living environment (noise) and development of tourism at the local level and in the Sečovlje salt-pans Landscape Park.
1c – 4g	-

8. Guidelines and Mitigation Measures – Cultural heritage

The development of transport infrastructure can have an impact on units and areas of culture especially in terms of the degradation of landscape features in the surroundings of cultural heritage units, damage to cultural heritage facilities, destruction of archaeological remains during the construction of facilities with vibrations which could cause damage to buildings of cultural heritage. To avoid these impacts, it is necessary to observe the following:

- Infrastructure corridors should not be placed in areas of cultural heritage as a priority.
- Prior to the spatial placement of transport infrastructure, it is necessary to conduct extensive preliminary archaeological research and consider their results when integrating the transport infrastructure, and implement measures to protect archaeological remains.

9. Guidelines and Mitigation Measures - Landscape

To ensure the preservation of extraordinary landscapes and landscape areas with distinctive features at the national level and a quality landscape image, it is necessary to pursue the following guidelines:

- Infrastructure corridors should not be sited in exceptional landscape areas or landscapes with distinctive features at the national level.
- Proper technical measures will be applied to provide the quality of landscape scenery, especially in the case of interventions in naturally preserved and culturally rich landscape units.

10. Explanation of observing individual mitigation measures

The preparation of the Environmental Report was conducted parallel to the drafting of the Transport Development Strategy of the Republic of Slovenia, and thus the Strategy is already complemented in the following transport measures:

- Measures in road infrastructure: Ro.44, Ro.45, Ro.46, Ro.47, Ro.35, Ro.48;
- Measures in railway infrastructure: R.41, R.42, R.43, R.44;
- Measures in urban infrastructure: U.40, U.41;
- Measures in maritime transport: M.35;
- Measures in air transport: A.3;
- R.7, R.8, R.9 and R.10 are included in the sub-objective 2
- R.3 was removed from sub-objective 2.b;
- Ro.7 is included in sub-objective 2.d.

The proposed measures in the Strategy were evaluated from the aspect of Strategic Environmental Assessment (SEA) with the purpose of ensuring a high level of environment protection. In October, the authors of the Environmental Report gave directions for supplementing individual proposed measures and some additional, i.e. horizontal measures. Thus, twelve new measures were added and three of the existing ones were supplemented. Among the measures, there are also some requiring additional verifications of reaching a certain sub-objective or supplementing certain measures in the Strategy. Before the public presentation the measures were supplemented with such mitigating measures in the Strategy. The directions and the mitigating measures have been fully included in the Strategy (among the measures and their impact on individual objectives), namely:

- Soil and mineral resources: measures R.41 and Ro.44 were added;
- Air: measures Ro.45 and U.40 were added;
- Climate factors: measures R.42, Ro.46 and U.41 were added;
- Water: measure M.35 was added;
- Nature: measures R.43 and Ro.47 were added;
- Population and material assets: measures A.3, Ro.35, Ro.33 and additional new measures R.44 and Ro.48 were added.

In accordance with recommendations of the authors of environmental report, measures for reaching sub-objectives 2a, 2b and 2d were studied in the Strategy and consequently a Table of measures and their impact on specific objectives was supplemented.

9. APPENDICES

The Environmental report on the comprehensive assessment of impacts on the environment for the Transport Development Strategy in the Republic of Slovenia, October 2014