# Integrated and Sustainable Transport in Efficient Network - ISTEN

## DT1.1.5 – Local context analysis for Koper

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## Document information

### Abstract

The present document provides data about local and regional situation referred to freight transport and to transport's infrastructure.

### Keywords

Gates, port-hinterland, bottlenecks, upgrades, scenarios, infrastructure, operational level, administration, railways, container terminal, vehicles

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* Abbreviations of editor/contributor name

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# 1 INTRODUCTION

The present Deliverable has been created in order to satisfy the main scope of the ISTEN project, which is the development of an integrated hubs network at regional level (ADRION region). The consolidated work will consist at the end, in the formulation of an Action Plan through which bottlenecks and lacks are identified, analyzed, as well as reported at regional level, producing a global vision of the actual situation, for a further transmission of the results at transnational level.

The structure of the report will follow the following logic: initially there will be defined and analyzed the characteristics of the local environment with the involved types of stakeholders; in a second phase, different types of bottlenecks will be identified, in order to distinguish the levels of possible interventions; at the end, actual and future scenarios will be identified or proposed, to better adapt theoretical solutions to real life logistics.

To allow the document to be as much realistic as possible, different types of stakeholders will be involved through interviews, fieldworks and experiences sharing. The range will include forwarders as well as railway operators, shipping agencies and municipalities.

# 2 CHARACTERISTICS OF THE LOCAL ENVIRONMENT

The Interreg ADRION region is the EU area in which most of the concrete interventions related to transport and logistics can be made. The Local Analysis is a document which tries to deal with the local/national transport system in a comprehensive manner, for the further analysis based on regional and corridor characteristics, for common solutions and decisions.

This approach can enable greater synergies in achieving the objectives of transport and organizational solutions in the local area, and greater control of the impact of transport on the environment and the economy at national level. At this regard a national transport model, which includes an analysis and calculation of future traffic flows, and social and environmental impacts, was developed at national level for the needs of the long-term planning strategies. The document represents a concrete attempt of intervention in the field of transport, and is supported by a comprehensive environmental impact assessment, which is yearly provided by the Port of Koper as a company registered at the national stock exchange.

Based on traffic flow forecasts, traffic safety, environmental impacts and social acceptability, the analysis determined future transport measures for different types of transport linked with the freight flows passing through the port of Koper, including also the characteristics for a sustainable mobility.

## 2.1 Port-hinterland chain overview

Its geographical location and history make Slovenia an intensive transport and transit area and the crossroads of the two major EU corridors (Mediterranean in green and Baltic-Adriatic in blue) as indicated in the picture below:

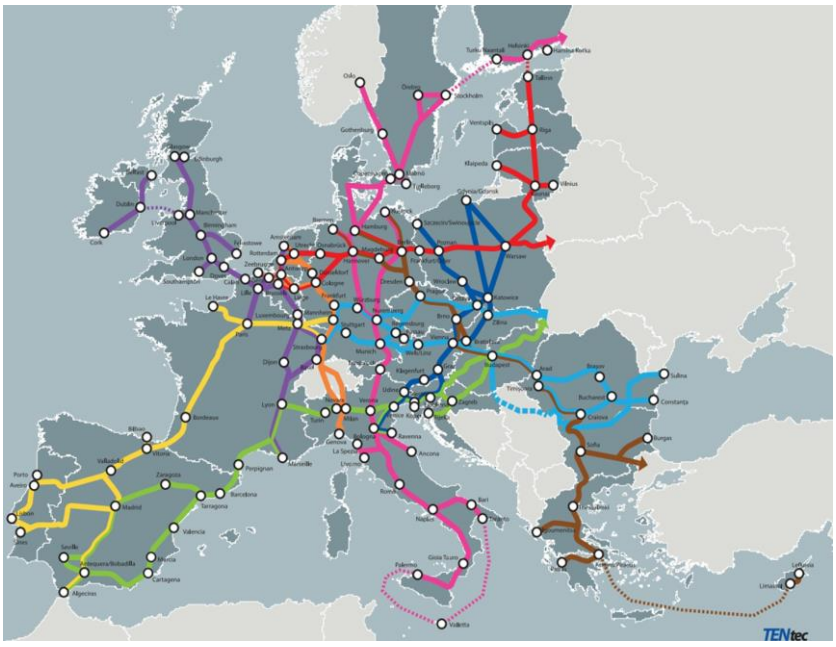


*Figure 1 TEN-T network (Source: TEN-Tec webpage https://ec.europa.eu/transport/themes/infrastructure_en )*

To implement the core TEN-T network in the financial framework from 2014 to 2020, the European Commission formed, and the Council of Europe and the European Parliament harmonised and confirmed, the corridors of the core network.

Following the last years' trends, the increased traffic flows follow economic growth, which will be simultaneously stimulated by higher levels of consumptions. Koper represents an opened window on the sea for many countries in the hinterland like for example: Austria, Hungary, Czech Republic, Slovakia etc.

The development and upgrade of 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 urban-economic centres. The only Slovenian port and national infrastructure system support the regional integration and contribute to the harmonised development of areas, thus enabling the mutual augmentation of functions of rural and urban areas.

The port of Koper is considered to be a modern port located in the North Adriatic, and of its advantages is to be a multi-purpose port, because it serves the transhipment of different categories of freights. In the past decade, the traffic of the port increased from year to year which represented an increase of volumes for the whole logistics in the hinterland. Each year, the throughput and other economic indicators return again with different types of records.

The port is largely bound up with international trade in back-up markets, with only about 30% of transhipment intended for the domestic Slovenian economy. With the increase in throughput, though the absolute share for Slovenia is somewhat increasing, but in relative terms it falls considering that transhipment is increasing at the expense of foreign back markets, which evidences the important role of export in port's services.

Following internal port's statistics, the main customers for the only Slovenian port are Austria, Hungary, Czech Republic, Slovakia, Poland, Germany, Italy and the Balkans, as indicated in the figure below:

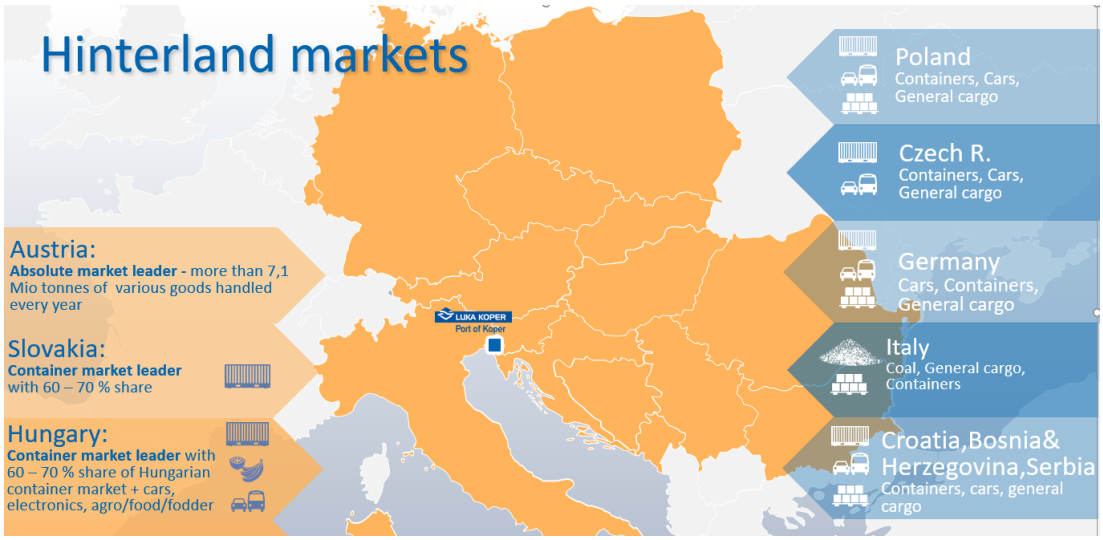


*Figure 2: Luka Koper's hinterland markets (Source: Luka Koper's own studies)*

It represents a concrete growth when comparing it with the data from the last two decades:

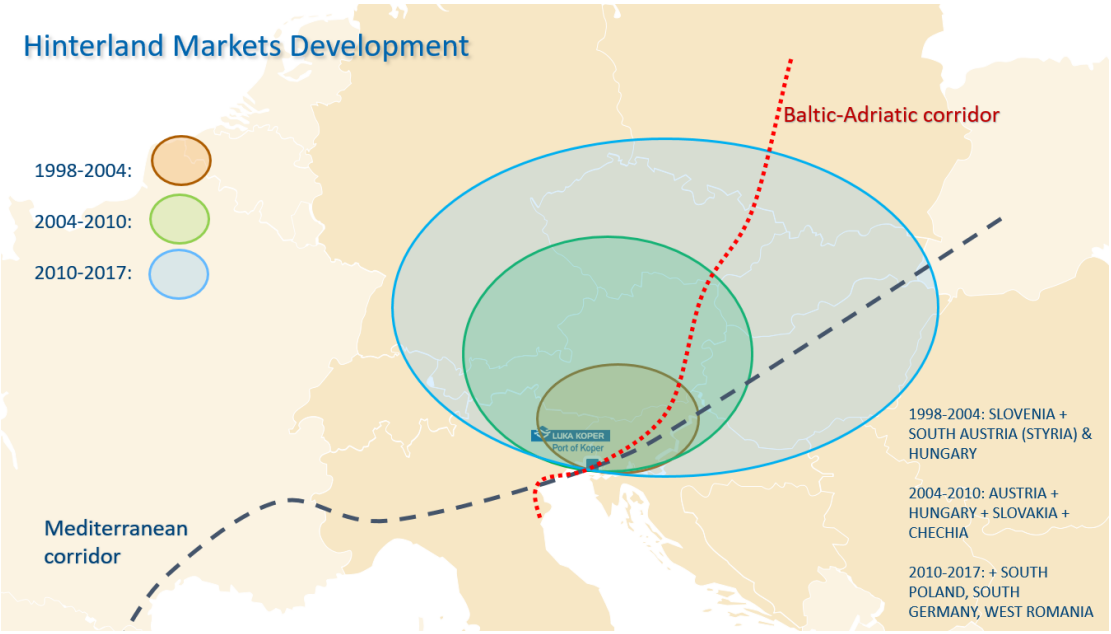


*Figure 3: development of Luka Koper's hinterland market (Source: Luka Koper's own studies)*

In port's activities are involved different types of stakeholders where the main contribution is provided by shipping agents, forwarders, railway operators, customs and phytosanitary inspection. All these actors are working strictly together with the port of Koper, focusing on the rationalization and speeding up the administrative and operational procedures.

The support of national agencies and institutions is fundamental for the simultaneous development of infrastructures and methodologies, following the growth of freight's volumes especially from/to Far East. At this regard, the expansion of port's action area and the construction of further railway and road's infrastructures is fundamental for the improvement of the regional economic growth. The increase volumes of cargo is also visible from the statistics indicated in the figure below, in which the container market is mainly highlighted:

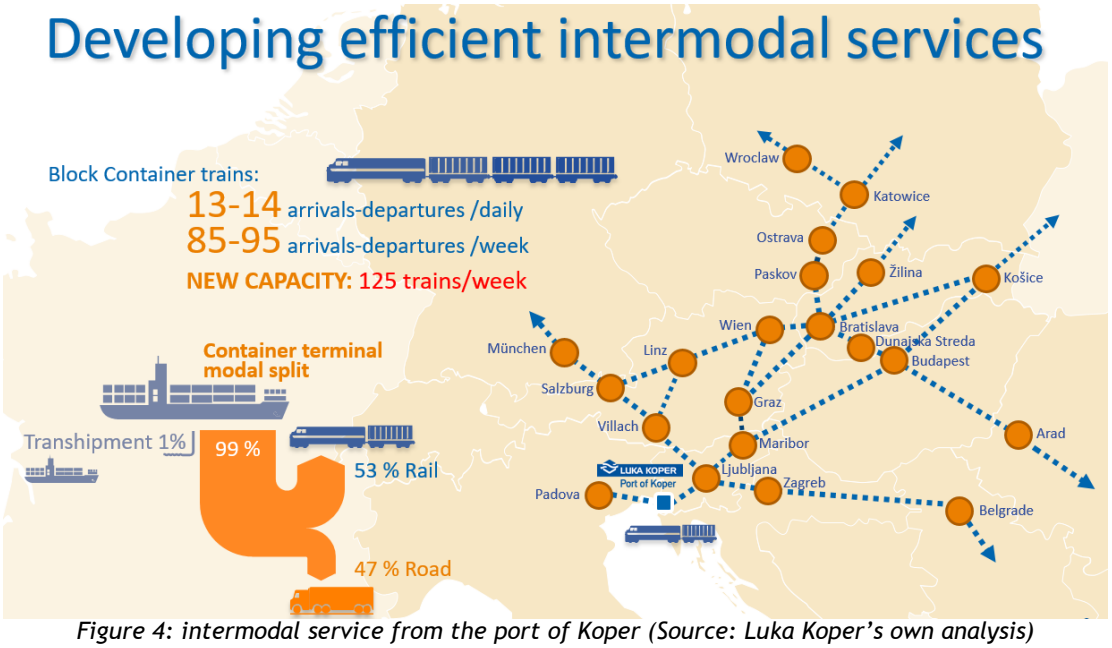


*Figure 4: intermodal service from the port of Koper (Source: Luka Koper's own analysis)*

## 2.2 Port-hinterland chain operations

In order to develop the port with its logistic chain through the hinterland, it is also essential to ensure timely provision of infrastructural interconnection, where national synergies are needed. Connectivity at infrastructure level is based on rail and road connections as well as sea accessibility, which has to be provided by national entities and agencies.

It is clear that investments are needed at large scale through national strategic projects of a public character, which require strategic decisions and large long-term financial investments. Due to the type of cargo and distances to back-up markets, a large part of goods flows from/to Koper are depending from rail-transport from/to the port (bulk cargo, timber, project cargo, liquid cargo, containers, cars etc.). In the case of rail connections, key problems arise in particular due to the lack of infrastructure mainly because of the need of the second track on the Koper-Divača line, which is the port's main communication arteria and where 60% of the goods are transported by rail.

In the field of road connections, it is important to indicate that in the last period a big part of the Slovenian motorway cross has been completed, which definitely contributes to the accessibility to the port. Regarding the roads, the biggest limitation is that actually the port of Koper has only one gate for vehicles entering/leaving the port, which is worsened by the fact that this gate is located strictly near the city centre and causes traffic jams or collapses during rush hour. In concrete, when talking about improvements and urgent interventions to reduce lacks and waiting time, in addition to the speeding up of internal procedures or to

the better operational organization, only the new entrance and direct connection of the port to the highway are missed.

For what regards the road and railway infrastructure, the Slovenian position is considered as an important transport system in the international (European) transport corridors network (TEN-T network), especially for the Mediterranean and Baltic-Adriatic corridors, as this is ensured by Slovenian connection and implementation with co-financing of missing segments.

It is also crucial to solve problems related to the sea routes, by deepening and maintaining depths of waterways to ports and drafts to provide support to the largest ships representing trend in port activity. When talking about deepening, the crucial problem is the delay in works linked with the second railway track from Koper to Divača which is actually extremely busy because of the growth of volumes of freight coming from Far Est, especially cars. The geographical position of the port of Koper influences the routes of the car industry from Far East both, for their row materials as well as for the final products (vehicles). In fact, the most of the world's car producers are using the port of Koper as the crucial view for the distribution of their products. The routes are allowing shorter transit times and cheaper services, being the port located in the heart of Europe.

The picture below shows very well the geographical advantages of Koper as a city in the heart of Europe and at the same time are included also the comparison of the distances with the main ports in Europe:

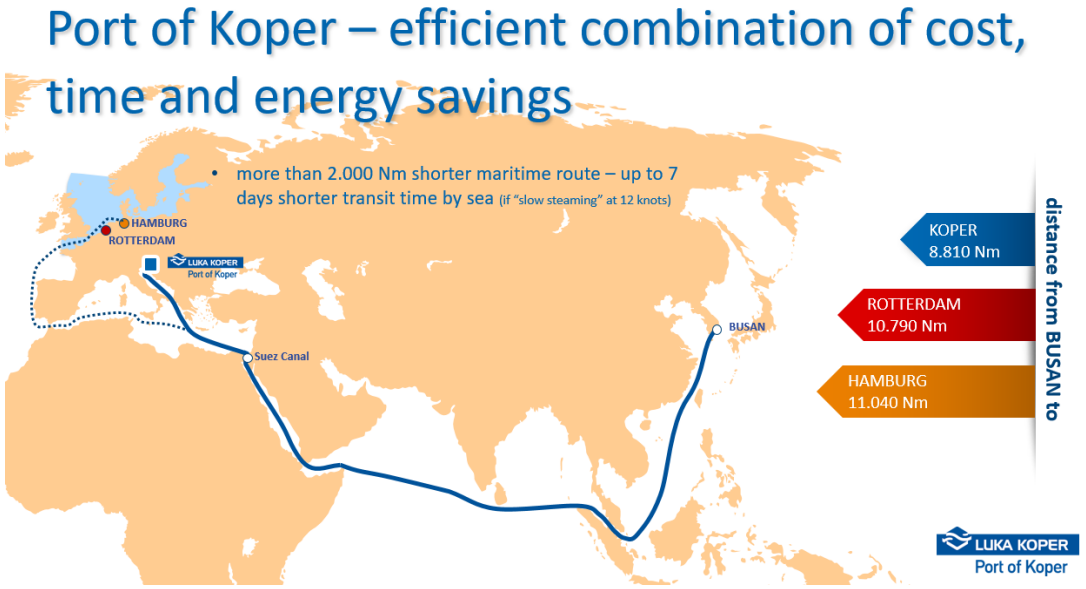


*Figure 5: Distances from Far East (Source: Luka Koper's own analysis)*

Raw materials from different continents are needed for car industries located in Europe and at the same time, completed cars are moved from EU to other continents and from outside to EU which makes the port of Koper the first port in the Mediterranean for manipulations of cars. In concrete, the port of Koper

represents the main gateway for more than 20 global car producers – considering import and export flows.


*Figure 6: Luka Koper's main customers (Source: Luka Koper's own analysis)*

Considering the increasing volumes of cargo related to the car industry, the investments in the port of Koper linked with this terminal are indicated in the picture below and consist mainly in: deepening of berthing areas, increase of storage area for exports as well as for imports, new RO-RO berthing ramps, five new railway tracks and larger piers.


*Figure 7: investments for car terminal in the port of Koper (Source: own analysis)*

## 2.3 Port-hinterland chain governance

Considering the important role that the port of Koper plays in the logistic chain for the whole region, it is crucial to consider its volumes compared with the other main ports in the Northern Adriatic. At this regard, it is evident how the container volumes represent the fastest growing typology of cargo manipulated by logistic stakeholders in the region (see picture below).

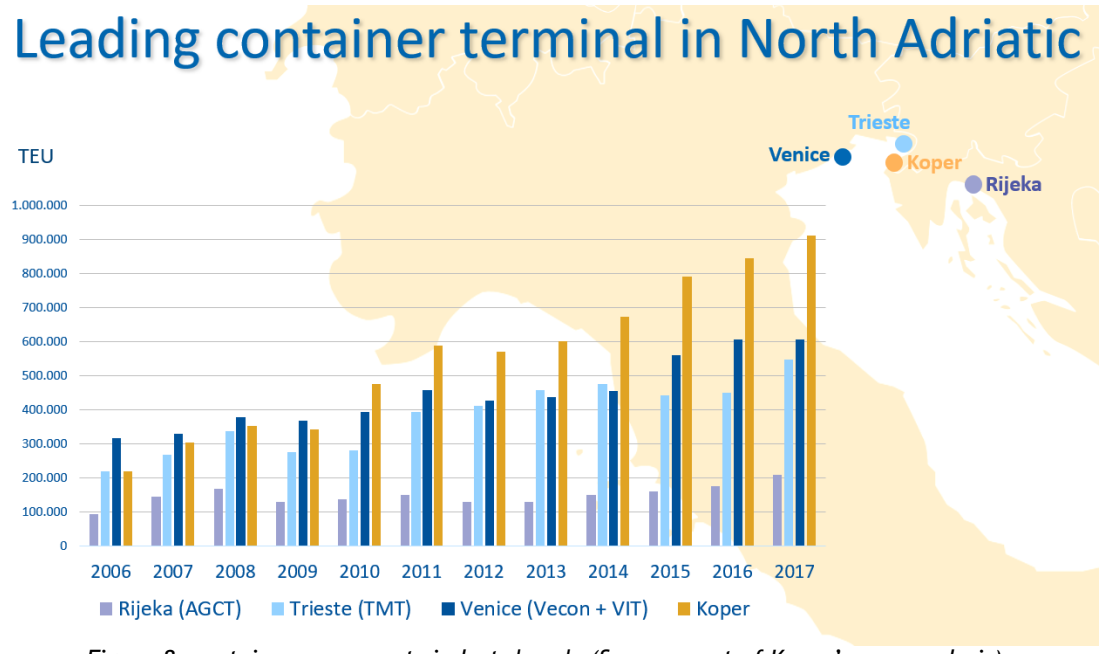


*Figure 8: container movements in last decade (Source: port of Koper's own analysis)*

Connection (infrastructure and service) is essential for each port, which represents only one link in the logistics chain. At this regard, the port of Koper needs:

**1. Effective Infrastructure Support:**

- As soon as possible, the establishment and construction of a two-track line (according to current estimations, it should be completed and operational only after 2027),
- the deepening of waterways and berths at container terminal and in front of the second basin,
- new gate in front of the container terminal, to reduce the traffic weight on the city centre, especially during rush hours.

For the above-mentioned interventions, it should be noted that this is a public infrastructure and therefore mainly public funding is expected. From the point of view of integration into international transport infrastructure networks, the TEN-T necessarily needs to be properly positioned on the Baltic-Adriatic and the Mediterranean Corridor and carry out the missing interventions on them. In addition, it is also worth endeavouring that, when Croatia enters in the EU, the Pan-European Corridor is best reflected in the TEN-T priorities, as currently TEN-T does not provide a link to Austria via Jesenice, which means less servicing of part of Austria and major parts of Bavaria and of the Czech Republic.

**2. The competitive performance of transport services:**

- on the maritime side:
  - shipowners (support of the port community),
- on the railway side:
  - maintaining 60% of the goods on the rail by modernizing the line (according to current estimations, this will be possible by 2019); however, it will be necessary to look for solutions for the later period (even with a greater load on roads), taking in consideration that a two-tracked line is not operational yet;
  - promoting the liberalization of services.

# 3 BOTTLENECKS TOWARDS BECOMING AN INTEGRATED HUB

Before starting with the description of the bottlenecks causing headaches to logicians in the Luka Koper region, it's good to see some recent results of a SWOT analysis made in relation to the maritime section of the logistic chain:

**STRENGTHS**

· Exit to the high seas through the developed port;
· Port of Koper – excellent starting point for markets of the Middle and East Europe;
· Recognised as a core TEN-T port and a part of priority CEF corridors, i.e. the Baltic-Adriatic and the Mediterranean (which provides its introduction to the Trans-European transport infrastructure network in the future and connection to the target hinterland markets);
· Recognition of the port and excellent reputation of the Port of Koper due to its reliability and adaptability of its services to market needs (good market positioning);

**WEAKNESSES**

· Limited land accessibility of the Port of Koper through the Koper-Divača single-track line and other sections of the railway network, with poor transport throughput;
· Inadequate depth of entry 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;

**OPPORTUNITIES**

· Further increase in cargo vessel traffic (consolidate leading role in the Adriatic and car transport in the Mediterranean);
· Growth of commercial activity of international trade through the Suez Canal where the transport route to Europe (through the North Adriatic) can be more competitive;
· Upgrade of the railway infrastructure to the Port of Koper and improvement of railway connections with hinterland markets;
· Adoption of the National Spatial Plan with the possibility to increase transhipment, which defines the possibilities for long-term port area expansion (possibility of planning the best possible 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 transport from North Sea ports;
· Further development of passenger transport in the port of Koper (complementarity and stimulation for the Slovenian tourist offer);
· Possibility of increasing the offer of port services through micro-distribution (added value services);

**THREATS**

· Shift of vessel freight to other North Adriatic ports, which will provide and adjust their capacities quicker (improve their offer, which will be more competitive);
· Shift of freight port transit to North Sea ports because shipowners will have fewer stops in Europe due to the optimisation of their logistics;
· Too slow adjustment of the Port of Koper infrastructure to market needs (increasing dimensions of vessels, especially container vessels);
· Delayed construction or non-construction of the 2nd track and the lack of modernisation of the railway system in Slovenia;
· Impact of global logistics actors and their interests (necessary integration in their sales networks/products);

## 3.1 Market bottlenecks

### 3.1.1 Market bottlenecks identified

Market bottlenecks are more related to the restriction rules for the competition in the railway system. The lack of competition among freight operators is one of the reasons that must be highlighted. In general, rail transport suffers a lack of marketing to attract the attention of industrial shippers. These chargers perceive the railway as difficult to implement and unreliable, expensive relative to the main road competitor. There is a problem of trade relations between the actors, including the pricing of slots and contractual relations. In addition to this, there is a lack of information and training/formation of stakeholders in the rail and combined transport, to generate interest.

There are difficulties in management of freights in containers (especially if there are empty containers) and have to face also insufficient insurances for intermodal freight transport. Problems related with services, marketing and communication are mainly: the lack of adequate customer service of train operators, difficulties in managing multifunction trains and a lack of flexibility for unforeseen changes.

Typical for the Slovenian railway system is the lack of direct connection services for destinations within Slovenian borders, with stops and changes of sections/directions only from Ljubljana station. It causes longer transit times and additional costs, when needs for turns and forming new (shorter) compositions are emphasised.

At regional level, when considering railway transport through the Balkans, the biggest problem is that port, road and rail operators do not use marketing instruments for the promotion of services. The problem is in total complacency and thinking that the freight will come themselves, and it does not need any marketing activity to obtain new volumes of goods.

### 3.1.2 Impacts of market bottlenecks

Main impacts are related with the limitation and low levels of growth of new railway lines. Establishing new services is in most of the cases caused by the infrastructural limitations, but in some cases the absence of commercial and promotional activities can be taken as the main reason of the stagnation of services.

The potential hidden in the railway transport system is enormous but the rigidity and obtuseness of some crucial actors on the logistic chain, are not allowing the concrete/faster development of the corridors, not allowing indirectly also to reach parallel results like the reduction of pollution, creation of sustainable transport chains and movement of freight from roads to rails.

## 3.2 Infrastructural bottlenecks

Considering that the main lack in infrastructure is related to the public structures linking the port with the hinterland, the initiatives and solutions requested by

stakeholders are always depending on National plans and financial capacities. The role of the Ministry of Transport in this chain is fundamental and includes not only economical aspects but is also promoting sustainable transport, by removing bottlenecks in key network infrastructures, in a sustainable way and environmentally with the lower possible impacts.

As per the Decree on bodies affiliated to ministries, the Slovenian Infrastructure Agency (hereinafter: DRSI) conducts expert, technical, organisational and developmental tasks relating to the construction, upgrade, reconstruction and maintenance of public railway infrastructure, and other tasks determined by acts and executive acts governing public railway infrastructure.

The DRSI is responsible for implementing policies relating to transport and railways, and the preparation of substantive groundwork for conducting tasks in the field of rail transport and transport infrastructure.

Reducing the focus on the bottlenecks affecting the infrastructure linking the port of Koper with the hinterland, the main obstacle is represented by the limitation in railway transport from/to the port juts through only one railway track. Unfortunately, the complexity of the upgrade of the railway system is excluding the construction/completion of a second railway track within next 10 years, even if it has just been approved.

### 3.2.1 Infrastructural bottlenecks identified

As mentioned in the introductive paragraph, the main lack in infrastructure is identified in the limited capacities of the railway system linking the coastal region with the hinterland. Reducing the view to only port's equipment and infrastructure, the bottlenecks are also identified in only one port's gate, which is not enough for the actual and future volumes of freight manipulated and planned in next few years.

The vessels berthing in the port of Koper are more numerous and always bigger with higher capacities which means that the infrastructure will be more and more utilized with breakdowns that must be kept in consideration if there will not be operational improvements. Even if the port of Koper is considered a multi-purpose port, the most important growth has been detected in the volumes of containers and of cars. That is why the priority in infrastructure's development has been given to the parts involving these types of cargo. The new gate that will be constructed in 2019 will serve mainly for the access at the container terminal and for trucks and wagons transporting cars. It will reduce the pressure on the actual only gate, reducing the traffic bottlenecks near the city centre. The agreements with the municipalities of Koper and Ankaran, as well as with the Government, will give the green light to the port of Koper's planned investments in the extension of the Pier I and of the area behind the third basin, where parking for cars and the sixth group of rails are being constructed. It's the response to the growing need for space requested by Luka Koper, which will include also interventions like the dredging of the seabed, to allow bigger container vessels to berth in the port of Koper.

### 3.2.2 Impacts of infrastructural bottlenecks

Actual bottlenecks that are mentioned in the previous paragraphs are the main obstacles hindering the development of Luka Koper as well as of the entire logistic chain that is linked with the operations occurring in the port: railway transport to the final destination, planning of delivery, communication with customers, registration of transported goods etc.

The main impacts are visible at economical level for all the involved parties, which does not exclude that this also affects the state coffers, considering that port's profits are partially delivered to the shareholders (the Republic of Slovenia is the owner of more than 60% of Luka Koper shares - listed on the Ljubljana stock exchange).

Other impacts at smaller level are the reductions of efficiency of the forwarders and transport companies, which cannot plan in advance their activities, due to the fact that sometimes crucial information are known with discrete delays.

From the technological point of view, the lack in infrastructure is linked with the obsolete programming equipment/software, which doesn't allow the operators to optimize their activities. Most of the stakeholders interviewed for this analysis, pointed out the necessity to have an upgraded system, with live information about the administrative procedures and allowing the traceability of the goods during their trip to the final destination, to the customer. It reduces the competitiveness of all the involved stakeholders and leaves space to concrete interventions in the near future, especially in the informatization system, for faster and better data communication.

## 3.3 Operational bottlenecks

### 3.3.1 Operational bottlenecks identified

The operations linked to the international rail services, especially at the borders between countries, involves several additional problems, apart from those already mentioned in previous paragraphs about infrastructural and geographical constraints.

The operators working at terminals and Border Crossing Points (BCPs) have to face some practical problems, like for example the one related to truck drivers performing international journeys, who have to speak in different languages considering those territories they are going to circulate in. The driver must change to make the journey in each section of the route but involves a limited stretch of the journey.

Sometimes also the cost of passing through some borders is relatively high. For example, step by some EU borders is approximately € 750 / train, which is equivalent to the change in load between different gauge wagons. In addition to this, circulation through some countries is also expensive, because of the high price of rail services. The current system of fees for the use of railway infrastructure, for the use of stations and other railway facilities is particularly complex and does not

follow, a transparent and objective scheme that encourages efficient use of railway infrastructure.

In the port, only one railway track leaving the port until Divača causes delays and internal organizational issues related to the interport's railway system. Some block-trains have to wait in the port for their departure and approximately, each day a block train spends in the port waiting for the authorization for the trip, an average of three trains has not been loaded because of lack of railway tracks.

### 3.3.2 Impacts of operational bottlenecks

The main impact of these types of issues is the reduction of efficiency in operational works and the increasing times for the administrative clearance of different types of documentation. The most visible impacts for the port of Koper and its stakeholders are detected at the gates and at the container terminal, where drivers have to wait for the proper documentation (from customs, from warehouses or from the phytosanitary inspection etc.).

In addition to this, the limitation of space in the port, can become quickly a problem, when loaded trains have to wait for their departure time. For example, it happens that trains loaded in late afternoon have to wait until midnight just to leave the port. After that, in addition to this, they can wait until morning hours to leave the Koper terminal for their trip to the hinterland, which can have impacts on the delivery time and consequently also on the credibility of the service. At the end, it could reflect in a loss of final customers or potential stakeholders, for the improvement of the logistic chain and for the service.

## 3.4 Institutional bottlenecks

Article 33 of the Maritime Code (Official Gazette of the Republic of Slovenia {Uradni list RS}, Nos. 120/06 – official consolidated text, 88/10 and 59/11) 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 commerce.

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 comprehensive European network. Stimulating the development of maritime infrastructure is 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 motorways of the sea, which comprise the maritime dimension of the trans-European transport network. Slovenia will promote short-distance maritime transport mostly by supporting measures that contribute to eliminating administrative obstacles and unify administrative procedures, ensuring the greater efficiency of ports and overcoming obstacles to connecting supply chains and to

unburdening the road network through the use of alternative transport forms (waterborne transport, railway).

At this regard, not only infrastructural bottlenecks have been faced by the involved actors, but also institutional obstacles are on the "to do list" of National institutions that are working to speed up procedures mainly at borders and for specific types of inspection.

### 3.4.1 Institutional bottlenecks identified

The highest level of institutional obstacles identified at corridor level are those related to the alignment of national documents with those expected in other EU countries. This type of bottleneck is increased with the parallel lack of programme and more capacitive software equipment needed to solve higher flows/quantities of data and documents. In the specific, when the analysis involves the goods coming through the port of Koper, there are stronger checking levels of documentation and traceability of refrigerated goods coming from non-EU countries. Countries like Israel and Egypt export a lot of goods for different EU countries, through the port of Koper and this manipulation of cargo require specific documents, certificates, inspections etc., which may lead to delays in clearance of goods for their further trip. As mentioned before, modernization of equipment can help in speeding up of procedures (for example, upgrade of software may allow instant communications between the stakeholders involved in the logistic chain, reducing waiting times).

### 3.4.2 Impacts of institutional bottlenecks

In last decade, the Government of the Republic of Slovenia adopted the Decree on the administration of the freight port of Koper, port operations, and on granting a concession for the administration, management, development and regular maintenance of its infrastructure.
Through the Decree Nos. 71/08, 32/11, 53/13 and 25/14). Luka Koper and the Republic of Slovenia signed the Concession Contract for performing port operations, and the management, development and regular maintenance of port infrastructure on the territory of the freight port of Koper for 35 years. In addition to this, the Republic of Slovenia adopted the National spatial plan for the comprehensive arrangement of the freight port of Koper, which requires the further expansion of port capacities and the development of activities.
These official documents leaded to the spatial and long-term development of the entire region, not only of the port of Koper, which allowed external investors or business partners to maintain a higher level of trust in next years' developments and in the stability of institutional roles. The consequence was an increase of volumes of freights and of contracts signed with important business partners. At operational level, the upgrade of specific types of equipment, allowed the

## 3.5 Innovation bottlenecks

The strategies related to the innovation are strictly linked with the sustainability of port's development. The upgrade or development of port's equipment is not

sufficient, if it is not supported by activities dedicated to the environmental risk management and operations.

Actual information obtained from stakeholders and from both the municipalities involved in Luka Koper's development show that the development of the port must include the reduction of all type of emissions (noise, water pollution etc.) that are related to port's activities.

Luka Koper, d. d., has always strived for better quality of life across the area of the port. Being aware of the port's impact on the environment, Luka Koper has committed in its policies to sound management of the environment in order to preserve it for future generations. The processes of monitoring and reducing environmental impacts have become part of regular activities. To this end, Luka Koper, d. d. works with competent specialised institutions.

### 11.2.2 Significant environmental aspects in 2017

| Environmental aspects evaluated as significant | |
|---|---|
| WATER CONSUMPTION / WASTEWATER / SEA | • Drinking water consumption<br>• Marine pollution from the handling of coal dust and iron ore<br>• Generation of wastewater in livestock truck washing |
| AIR EMISSIONS | • Dust emissions/immissions from services |
| ENERGY / INTERNAL TRANSPORT | • Internal transport powered by diesel engines<br>• Electricity and fuel consumption |
| NOISE / ODOUR | • Generation of noise in the port<br>• Noise emissions from freight and passenger ships |
| OTHER ENVIRONMENTAL ASPECTS | • Deepening of seabed and disposal of marine sediments |

*Figure 9: Environmental aspects in Luka Koper d.d. (Source: Luka Koper's annual report)*

The environmental management system in the Port of Koper has been designed in a way that environmental aspects are reviewed and evaluated as part of the annual planning process. Environmental aspects are elements of activities, products and services with significant impacts on the environment. The criteria for evaluating the significance of environmental aspects include year-on-year progress, compliance with the law and compliance with the adopted internal standards, cost increase, and public opinion. To indicate significance in the evaluation process, a colour scale is used (red, yellow, green). An environmental aspect is considered significant when any of its criteria is evaluated red or at least three criteria are evaluated yellow. In analysing environmental aspects, all our activities are considered (in terms of indirect and direct impacts on the environment). The table shows the environmental aspects evaluated as significant. Generation of sanitary wastewater is no longer classified as a significant environmental aspect after the sanitary wastewater treatment system was modernised. The Environmental report also discusses other identified environmental aspects, with the aim of providing a complete overview of the Company's environmental activity.

For the environmental aspects evaluated as significant, annual quantifiable targets are set and improvement programmes are developed to facilitate the process of

meeting the targets and make it more efficient. The implementation of improvement programmes is reviewed annually and reported on in the Environmental report. The adequacy of the established environmental management system is examined and evaluated also as part of regular internal assessments and management reviews.

### 3.5.1 Innovation bottlenecks identified

Within the scope of stimulating the development of motorways of the sea and short sea shipping, and in addition to the development of port and hinterland infrastructure, the appropriate infrastructure and equipment for ensuring the safety and monitoring of maritime transport will be provided with all the necessary support of the Government, 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 shipbuilding and ship component production; improvement of communication systems in the port with the installation of G5 next generation data network.

### 3.5.2 Impacts of innovation bottlenecks

From the technological point of view, the inclusion of new technologies in the communication system can speed up data transfer and in first instance can allow distribution or transfer of higher quantities of data.

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 the field of the maritime infrastructure development at the Port of Koper, approximately one third of the existing port infrastructure has been further developed in the past twenty years. The most important investments include the additional construction of berth 7C at the container terminal and the extension of berths at the terminal for chemicals on Pier 1, the extension of the southern wharf of Pier 2 (berth 11) 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 the 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's business strategy, as well as in the port's development programme (as per the provisions of the Decree and the Concession Contract, the Government of the Republic of Slovenia adopts the Port of Koper development programme every five years, which it then annually monitors or supplements), which are in accordance with the adopted National spatial plan for the comprehensive arrangement of the port of Koper. It will allow the port to increase its capacities for the manipulations of freights and will contribute to the

growth of the entire logistic system supplied by the only Slovenian port. Improvements will allow to achieve higher levels of transhipment for the Port of Koper, higher volumes of containers transport (mainly from/to Far East), maintenance of the multi-purpose role of the port in favour of reducing business risks and greater cost efficiency by internal redistribution of capacities. It will have as consequence the extension of market management and development of offer to create greater added values, it will establish closer and more efficient relations and partnerships between all providers of logistical services.

There are also favouring in parallel interventions contributing to the sustainable development of the port and environmental protection and safety, with the use economical, modern and innovative technologies, where information communication support is very important and will increase the cooperation between the port and the local community.

# 4 MEDIUM-TERM SCENARIOS

The transport strategy in Slovenia has been studies with the inclusion of SWOT analysis that foresees the following medium-term scenarios until 2030:

**STRENGTHS**

- geographical position (the shortest link between the Baltic and the Adriatic and the link between SW Europe and E Europe);
- integration into 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;
- a high share of income from road haulage 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.

**WEAKNESSES**

- 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 high number of settlements (6031), out of which small settlements predominate (3,798 settlements with a population from 50 to 500 inhabitants) and consequently expensive construction and maintenance of infrastructure that can meet requirements in terms of accessibility and connectivity at different levels;
- underdeveloped and unconnected public passenger transport;
- non-competitive railway network compared to the road network (deficient organisation of railway transport, worn out or obsolete railway infrastructure and non-harmonised with TSI – technical standards for the interoperability of railway systems, insufficient number of contemporary means of transport on the railway);
- main, regional and local roads are also unsuitably categorised under administrative-political and not just transport-functional criterion, which is the main reason for the 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 reduces actual accessibility and lowers the quality of life;
- high environmental costs and high share of protected areas (Natura 2000);
- dependence of daily commuters on passenger cars (high share of motorisation).

**OPPORTUNITIES**

- unification and harmonisation of transport systems operation;
- development of new transport technologies (e.g. electric vehicles, new forms of freight manipulation);
- increasing the volume of rail goods transport;
- relocation of production to East Asia; the Northern Adriatic is gaining in importance as an entry port for finished products;
- unification of the existing infrastructure operation: Slovenian service provides would provide comprehensive services instead of partial logistics services;
- further development of (South) Eastern Europe (and Turkey) and its integration into the European Union will enable an increase in transport flows;
- development of contemporary railways on the TEN-T corridors passing through Slovenia, decreasing freight travel time through the whole logistics chain;
- developed capacities and infrastructure of public airports for the international air transport in Slovenia that enable the transport of a considerably more passengers;
- development of intermodal systems (airport-railway-road-port) where the need for such services exists.

**THREATS**

- redirection of transit transport flows to the parallel network through Italy, Austria, Hungary or Croatia due to too slow development of railway transport infrastructure;
- redirection of freight 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 safety in freight and passenger transport due to too slow network modernisation;
- increasing suburbanisation—the continuation of the trend of dispersed sprawling settlements with a low population density, which aggravates the establishment of an efficient public passenger transport system;
- continuation of the lack of connection between conductors of public passenger transport;
- regression of the maintenance and development of the network of other state roads, which will not be able to take over transport flows;
- socially unacceptable degradation of (residential) environment;
- civil air transport represents a threat in terms of a quickly developing competitive airport network in the 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 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 urban areas

## 4.1 Main factors to influence future development

The vision of development in the field of transport is already defined in Resolution on Transport Policy of the Republic of Slovenia and divided into a vision of population mobility and a vision of supply to the economy.

The vision of population mobility states that the country must provide basic possibilities for the mobility of the population. In the light of this, it should provide an integrated system of public passenger transport that is accessible to users, including airports and ports. To simulate and increase the use of public transport, passengers also need to be educated in order to develop intermodal and sustainable passenger transport: walking-bicycle-car-taxi-ship-bus-train-plane. Special attention needs to be paid to the elderly and persons with physical and sensory disabilities.

In terms of the vision to supply the economy, Slovenian logistics needs integral logistics services and regional intermodal centres. Due to the growing volume of road haulage and environmental problems, it is necessary to stimulate the shift of goods transport from road to rail. One of the possibilities for this is a user charge on a commercial basis which takes 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 sections with insufficient throughput have to be eliminated at (especially the main) multimodal transport axes.

Special attention must be given to traffic safety and developing intelligent transport system use, namely in terms of population mobility and also supply to the economy. At the same time, security, which gains in importance with the increasing number of terrorist operations, must not be forgotten. Transport with this kind of future orientation will contribute to the economic development of Slovenia and the welfare of its citizens, as well as provide for the sustainable development of transport in the future.

Thus, all the national managers have to focus on three main objectives: the construction of a competitive transport network, implementation of integrated public passenger transport, and development of competitive transport logistics.

Financial aspects are always one of the main issues influencing the development. If solutions are not convenient from the financial point of view, they result very difficult to be adopted. That’s why, focusing on the main infrastructure challenge of the next decade, the improvement of railway connections between the port and the hinterland must keep in mind the following objectives:

- Preservation of the achieved level of competitiveness of the economy by shortening travel times and reducing transport costs;
- Harmonising and/or guaranteeing the interoperability of public railway network with the EU network;
- Better accessibility to individual regions and better interregional connection, linking parts of Slovenia that have not been connected appropriately yet to the main European railway corridors, thus enabling a more equal distribution of economic benefits of Slovenia's development;
- Improvement of traffic safety.

In parallel the development of the maritime sector must include the development of facilities for the safety of navigation and facilities as well as devices for the supervision of a 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 supervising the safety of navigation.

## 4.2 Scenarios’ formulation

The port of Koper is one of the most important strategic platforms in the Republic of Slovenia, since it carries out all main transport and logistics activities of national

and wider regional importance. It has a distinctively favourable geographical position for supplying the markets of Middle and Eastern Europe, in particular in relation to fast-growing markets through the Suez Canal (the Middle-East and the Far East).

To improve the competitiveness of the Port of Koper with neighbouring ports, the timely construction of the new Koper-Divača railway is especially important, along with a timely completion of operational wharves for the transhipment of containers and vehicles and for the arrangement of hinterland storage areas.

The focus should be on transport logistics, which will create new high added value jobs. Logistics activity can create 14% of GDP, so the development of sustainable transport logistics which has positive effects on reducing external costs must be promoted in future. This is beneficial to the quality of life and traffic safety and relieves the environment. Without a competitive railway infrastructure and modern intermodal transport terminals, sustainable transport logistics is not possible. Logistics centres and transport terminals of combined transport and transhipment points are not necessarily a part of public transport infrastructure but can be privately owned. The practice of public-private partnership must be promoted.

Sustainable or green logistics in cities plays a great part in the supply of the economy, and also influences the way of life. The improvement of supply chains in cities will not affect the quality of life in cities. Green city logistics systematically competes with other functions in the city, such as the residential environment, shops, services, etc. in the scope of the historical circumstances, current facts and future plans.

Transport logistics occupies space, creates transport and jobs, and apart from the environmental limitations (air quality - PM10, etc.) and noise issue, constitute an important factor in strategic spatial and transport planning.

## 4.3 Expected impacts of alternative scenarios

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

- Improvement of mobility and accessibility;
- Improvement of the supply to the economy;
- Improvement of traffic safety and protection;
- Reduction of energy consumptions;
- Reduction of costs to users and operators;
- Reduction of environmental burdens.

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

Expected impacts are divided per categories of transport as indicated in the following paragraphs.

- For the railways, the most significant impacts will be: the increase of economic competitiveness by the reduction of travel times, eliminating the low traffic flow and reducing transport costs, harmonise and guarantee the integration of the railway network with EU's network, reduction of environmental burden, improvement of traffic efficiency, reduction of operating costs, introduction of interoperability;
- For the roads, the most significant impacts will be: reduction of travel times between regions, elimination of bottlenecks or low traffic flows, higher traffic safety by eliminating congestion points and implementing applicable national and EU legislation, introduction of interoperable models of toll service, pursuant to EU legislation, provision of adequate traffic areas for secured parking lots at the motorways, approximately at every 100 km, provision of the infrastructure for alternative fuel, provision of arranged and safe stations and stop facilities.
- For the maritime traffic, the most significant impacts will be: improvement of the navigation safety by providing adequate technical and organisational conditions for control, monitoring and notification in maritime transport (e.g. the establishment of the VS centre, provision of adequate facilities and qualified personnel, automation of navigation safety facilities, keeping updated data), increase in port's capacities and the volume of transhipment through the Port of Koper, provision of adequate hinterland's rail connections, development of motorways of the sea and stimulation of short-distance maritime transport, increase of entries in the Slovenian Ship Register, reduction of administrative burdens and strengthening cross-sectorial cooperation by establishing a single window for maritime transport and other solutions for exchanging information in maritime transport and last but not the least, provision of infrastructure for alternative fuel.